Self-harm in Adolescents in Ghana

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Submitted in accordance with the requirements for the degree of
Doctor of Philosophy

The University of Leeds
School of Psychology

September 2019

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

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Acknowledgements

I would like to express my heartfelt gratitude to the Leeds International Research Scholarship (LIRS) Postgraduate Scholarships Office, University of Leeds. But for their funding the output of this 'pioneering' and worthwhile piece of research about young people across sub-Saharan Africa (and Ghana) perhaps would not have been possible.

Also, I would like to sincerely thank my supervisors – Prof Mitch G. Waterman and Prof Allan O. House – for their unparalleled commitment and critical guidance through this rather gruelling but rewarding research experience. I am also grateful to Dr. Amanda Waterman and Dr. Anna Weighall, my post-graduate research tutors; they ensured that I had a warm and comfortable office to work.

Next, I would like to thank Judy Wright (Senior Information Specialist in the Leeds Institute of Health Sciences) and Rocio Rodriguez Lopez (Information Specialist in the Academic Unit of Health Economics) of the University of Leeds for their assistance with developing comprehensive systematic literature search strategies for the systematic review component of this thesis. Similarly, I would like to thank all the suicidologists, authors and self-harm researchers who responded to my correspondence requesting for papers from their personal records to support the systematic review of this thesis.

I would like to thank Prof James Newell, for his critical comments and suggestions during my PhD candidature transfer viva. His suggestions helped to pitch this research at a good level of quality. Similarly, I want to also thank all the authors who permitted the adoption of items from their original survey measures for this research.

Next, I would also like to thank Prof Charity Sylvia Akotia and Prof Charles Christopher Mate-Kole of the University of Ghana for their guidance in obtaining ethical clearance for this research in Ghana. I wish also to thank all the key stakeholders who granted permissions for the primary studies of this thesis: heads of the participating schools, directors and management of the selected charity organisations, the Greater Accra regional office of the Ghana Education Service, the Department of Social Welfare headquarters, Accra, and parents/guardians of the younger adolescent participants.

I thank Prof Joseph Osafo, Dr. Francis Annor, Dr. Kwaku Oppong Asante and all the senior research fellows at the Centre for Suicide and Violence (CSVR) – Accra for their expert views and suggestions during the field testing of the questionnaire used for this study.

I am grateful to the African-Norwegian Research Group on Mental Health (ANoRGrOM-H) for the invited presentation of the protocol of this research at their 2016 annual cross-national workshop in Entebe, Uganda. The feedback from the group was useful.

Next, I would like to express my appreciation to all the participants in the primary studies of this research. If it were not for their willingness, efforts, time and contribution of information (largely about their private lives), this thesis would not have seen the light of day. Additionally, I wish to thank my fieldwork assistants and the street social workers (Jermiah Gadze, Erica Katsekpor, Portia Tsanortey, Gifty Osafo, Rita Tagoe, and Nancy Aryee) for their support in collecting the survey data for this research.

I am very grateful to Robert West (Professor of Biostatistics) and Farag Shuweihdi (Research Fellow in Applied Health) at the Leeds Institute of Health Sciences for their pieces of advice with the statistical modelling of the survey data of this thesis. I also wish to thank Mark Hullah (IT/Resources Officer) in the School of Psychology, University of Leeds, for ensuring that troubles with my laptop and analytical programs were addressed sufficiently early.

Again, I thank CSVR and the Ghana Mental Health Authority for organising four separate transferable skills training and evidence-based workshops for various stakeholder groups (i.e., journalists, queen mothers, second cycle school teachers and counsellors, and religious leaders) in Ghana and inviting me as a speaker to share the key findings and implications of this research. I want to thank the management of Obonu Television and Radio Universe (both media houses based in Accra) for giving me the opportunity to share the key findings of this research with a wider section of the Ghanaian public.

I would also like to say “thank you” to my colleague PhD students and friends, particularly, Johnny Andoh-Arthur, Pauline Oustric, Luke Budworth, Qian Zhang, Akweley Otoo and Daniel Fobi for their various emotional and informational support. I am especially grateful to Andy Hall and Ana Lahnstein for the hospitality they showed me during the final stages of my PhD studies – they gave me a comfortable home to stay in Heckmondwike free of charge, to finish writing up this thesis.

I wholeheartedly thank Thirze Hermans for her love and companionship.

Finally, I would like to express my most profound appreciation to my family (Naa-Shasha, Nii-Shidaa, Nii-Laryea, Nii-Norkeh, and the Quarshies) for the deep emotional support and prayers for life, good health and strength to reach this milestone.

Abstract

Background

While self-harm in adolescents represents a public health concern in most high-income countries, the phenomenon is under-researched within low- and middle-income countries, including Ghana.

Methods

This PhD research involved three empirical studies. Study 1 was a systematic review synthesising the accessible literature on adolescent self-harm across sub-Saharan Africa. Following from Study 1, an explanatory sequential mixed methods approach was utilised to conduct two primary studies on adolescent self-harm in Accra, Ghana. Study 2 was a cross-sectional survey of 2107 in-school and street-connected adolescents in Accra describing the self-reported prevalence estimates, correlates, self-harm methods and reasons. Study 3 involved one-to-one semi-structured interviews exploring the lived experiences of 36 in-school and street-connected adolescents with self-harm histories, and the views of 11 key adult stakeholders regarding the phenomenon in Ghana.

Results

Study 1 found considerable variability in the prevalence estimates of self-harm in adolescents across sub-Saharan Africa. Consistent with the evidence in Study 1, Study 2 showed that, overall, typically, one in five adolescents reported self-harming in the past year; however, the prevalence estimates were lower in street-connected than in-school adolescents. Self-injury was more frequently reported than self-poisoning by the two groups of adolescents. Adolescent self-harm in Accra was commonly associated with multiple intrapersonal and interpersonal factors within and outwith the family context. In Study 3, the participants' accounts and meaning-making were elaborated more along the lines of social interactions with others and moral standards, with little emphasis on individual level difficulties and mental states.

Conclusion

Self-harm in both in-school and street-connected adolescents in Accra, Ghana is a significant public health concern as it could be across other sub-Saharan African countries. Further studies of high methodological quality are recommended to expand the evidence base for the understanding, intervention and prevention of self-harm in adolescents in Ghana and within sub-Saharan Africa.

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List of Abbreviations

AIDS	:	Acquired Immunodeficiency Syndrome
AMSTAR	:	A MeaSurement Tool to Assess systematic Reviews
APA	:	American Psychiatric Association
AU	:	African Union
BECE	:	Basic Education Certificate Examination, Ghana
CAMH	:	Child and Adolescent Mental Health
CAS	:	Catholic Action for Street Children, Ghana
CDC	:	Centers for Disease Control and Prevention
COREQ-32	:	COnsolidated criteria for REporting Qualitative research
CRD	:	Centre for Reviews and Dissemination, UK
CSSPS	:	Computerised School Selection and Placement System
DSM-5	:	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
DSW	:	Department of Social Welfare, Ghana
GES	:	Ghana Education Service
GSHS	:	Global School-based student Health Survey
GSS	:	Ghana Statistical Service
HDI	:	Human Development Index
HIV	:	Human Immunodeficiency Virus
IQR	:	Interquartile range
IRB	:	Institutional Review Board
ISSS	:	International Society for the Study of Self-Injury
LAMICs	:	Low-and middle-income countries
LGBT	:	Lesbian, gay, bisexual, and transgender
MMAT	:	Mixed Methods Appraisal Tool
NGO	:	Non-Governmental Organisation
NHIS	:	National Health Insurance Scheme, Ghana.
NICE	:	National Institute for Health and Care Excellence, UK
NSSI	:	Non-suicidal self-injury
OHCHR	:	Office of the United Nations High Commissioner for Human Rights
PRISMA	:	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PRISMA-P	:	Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols
PROSPERO	:	International prospective register of systematic reviews
RCPsych	:	Royal College of Psychiatrists, UK.
SA-ETD	:	South African national Electronic Theses and Dissertations
SAYRBS	:	South African Youth Risk Behaviour Survey
SDG	:	Sustainable Development Goals
SDSN	:	Sustainable Development Solutions Network

STROBE	:	STrengthening the Reporting of OBservational studies in Epidemiology
UK	:	United Kingdom
UNDP	:	United Nations Development Programme
UNFPA	:	United Nations Population Fund
UN-HABITAT	:	United Nations Human Settlements Programme
UNICEF	:	United Nations International Children's Emergency Fund
US	:	United States
WAEC	:	West African Examinations Council
WASSCE	:	West African Senior School Certificate Examination
WHO	:	World Health Organisation

Chapter 1

1.0. Overview

This chapter provides the outline and general introduction of this PhD research. It begins by providing an overview of the conceptual and definitional debates about "self-harm" and states the precise chosen definitions of the key terms used in this study. The chapter also provides an overview of the scientific background to this thesis, problem statement, aims of the thesis, the research context and population of study, and a summary of the general research methodological and ethical considerations for this study. This chapter ends with a description of the structure of this thesis and delineation of the chapters.

1.1. Definition of Terms

Each of the key terms used in this study ("self-harm" and "adolescent") has variant definitions in the literature. Thus, this sub-section provides the specific definitions of these key terms as applied in this thesis to guide and facilitate the understanding and interpretation of the discourse and evidence produced in this thesis.

1.1.1. Definitions of Self-harming Behaviours

Even though intentional self-harming behaviours have attracted significant research attention within the past several decades, there is very little consensus in the literature as to the definitions, nomenclature, and classification of the concept "self-harm" (Angelotta, 2015; Goodfellow, Kõlves & De Leo, 2018a; Ougrin, Zundel & Ng, 2010; Silverman, 2006, 2016). Most of the research contributing to the understanding of self-harm has been conducted in North America, Europe, Australia, and New Zealand, with a dearth of studies from low-and middle-income countries – LAMICs (Aggarwal & Berk, 2015; Aggarwal, Patton, Reavley, Sreenivasan & Berk, 2017; Gandhi, Luyckx, Maitra & Claes, 2016). Thus, there is limited research contribution from LAMICs to the conceptual and definitional issues regarding self-harm.

Researchers and practitioners tend to adopt different concepts and terminologies depending mainly upon their geographical context. Some of the terms, descriptors, and definitions of intentional self-harming behaviours used by some researchers and practitioners have been found to be confusing, stigmatising, and sometimes pejorative, hampering diagnostic precision and treatment, research

and data quality, intervention and prevention efforts (Berman & Silverman, 2017; De Leo, 2011; McAllister, 2003; Silverman & De Leo, 2016; WHO, 2016). For example, the term “deliberate self-harm” has been found to be problematic, as “deliberate” implies wilfulness and premeditation, thereby potentially “pathologising” or “medicalising” the behaviour and may lead to value judgement being made regarding persons involved in the behaviour (Adler & Adler, 2007; NICE, 2012; Ekram, 2016; Hasking & Boyes, 2018; Lewis, 2017; Pryjmachuk & Trainor, 2010).

According to the Royal College of Psychiatrists (RCPsych, 2014, p.1) the term “‘deliberate self-harm’ can be seen as dismissive or offensive to people for whom self-harm is an aspect of their illness”. For persons with abusive childhood experiences, acts of self-harm appear to occur out of the individual’s awareness or control during dissociative states (NICE, 2012).

Similarly, the term “parasuicide” has been found to be practically problematic, as it poses a difficulty regarding precise translations in some cultures (WHO, 2016). In the languages of some cultures, the prefix “para” could mean “mimicking”, “resembling” or “pretending”, which potentially leads to biased research findings as it creates confusion regarding the precise meaning of the behaviour being studied (De Leo, Burgis, Bertolote, Kerkhof & Bille-Brahe, 2004). Again, as with the term “attempted suicide”, where “parasuicide” is used to mean suicide attempt, it leads to a difficulty with clarifying the element of intent, because it does not address the fact that some people who engage in the behaviour have no clear intention to die (Anderson, 1999; Bille-Brahe et al., 1995; Linehan, 1997; WHO, 2016).

1.1.1.1. Suicidal / non-suicidal distinction

Whereas “non-suicidal self-injury” is used in North America, the broader term, “self-harm”, is favoured by those in Europe, Australia, and New Zealand (APA, 2013; Arensman & Keeley, 2012; De Leo, 2011; Kapur, Cooper, O’Connor & Hawton, 2013; Ougrin et al., 2010; Robinson, 2017). In the United States, generally, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) of the American Psychiatric Association presents suicidal behaviour and non-suicidal self-injury as different disorders (APA, 2013). According to the International Society for the Study of Self-injury (ISSS, 2018), non-suicidal self-injury is “the deliberate, self-inflicted damage of body tissue without suicidal intent and for purposes not socially or culturally sanctioned”. The term, non-suicidal self-injury, is limited to such acts as cutting, hitting, burning, scratching oneself, stabbing, self-battery, abrading or excessive rubbing, excoriation of wounds, among others. In a systematic review that attempts to distinguish between suicidal and non-suicidal self-injury,

Muehlenkamp (2014) observes that both suicidal and non-suicidal self-injury may be related to suicide, but the two behaviours are different from each other across a number of descriptive features (e.g., intent, course, method, lethality etc.), demographic characteristics (e.g., gender, sexual orientation, race, socio-economic status etc.), and psychosocial variables (e.g., psychiatric diagnosis, impulsivity, aggression etc.). Within the classificatory scheme of non-suicidal self-injury, self-poisonings and overdoses are excluded, as it considers these acts as suicide-intended or attempted suicide (Andover et al., 2012; Favazza & Rosenthal, 1993; Walsh, 2007). For example, Walsh and Rosen (1988, p. 32) have argued that,

> In the case of ingesting pills or poison, the harm caused is uncertain, ambiguous, unpredictable, and basically invisible. In the case of self-lacerations, the degree of self-harm is clear, unambiguous, predictable as to course, and highly visible. In addition, the self-laceration often results in sustained or permanent visible disfigurement to the body, which is not the case with overdose.

However, one criticism against this view draws on evidence from available studies that some persons who self-poison or take overdoses may not report suicidal intentions (e.g., Fox, Millner & Franklin, 2016; Gjelsvik, Heyerdahl, Holmes, Lunn & Hawton, 2017; O'Carroll et al., 2002; Posner, Brodsky, Yershova, Buchanan & Mann, 2014). More pointedly, evidence from hospital-based studies have suggested that between 25% and 50% of patients who self-poison may not have the intention to die (Kapur et al., 2006; O'Connor et al., 2007).

The prefix "non-suicidal" (as used in the term "non-suicidal self-injury") can be misleading, as there is a plethora of evidence to suggest that a strong association exists between non-suicidal self-injury and elevated risk of future suicidal behaviour and suicidal death (Grandclerc et al., 2016; Kapur et al., 2013; Kieken et al., 2018; Mbroh et al., 2018; Victor & Klonsky, 2014). Moreover, research has indicated that suicidal intent is fluid rather than a dichotomous "yes/no" concept, and thus such a dichotomy only limits our understanding of self-destructive behaviours (Arensman & Keeley, 2012; Kapur et al., 2013; Fox et al., 2016; McAllister, 2003; Straiton et al., 2013; WHO, 2016). In a recent study examining the course of suicidal and non-suicidal self-injurious thoughts and behaviours between 106 out-patient and 174 in-patient adolescents in the United States, Glenn et al. (2017) found an unclear temporal relationship between suicidal and non-suicidal self-injurious thoughts and behaviours. Most of the adolescents in both clinical samples reported high lifetime co-occurrence of both non-suicidal self-injurious acts and suicidal acts.

In terms of the clinical implications of the suicidal/non-suicidal intention dichotomy assumed by non-suicidal self-injury, it has been argued that with the continuous demand pressure on clinical service at the front-line, patients reporting "non-suicidal" self-injury are likely to be less prioritised by nurses, compared to patients with episodes of "suicidal" self-injury or attempted suicide (James & Stewart, 2018; Kapur et al., 2013). Finally, although "non-suicidal self-injury" potentially offers a pragmatic psychiatric classificatory solution, the term cannot be tested epidemiologically and as such poses a challenge if applied to the establishment and maintenance of surveillance systems for suicide attempts and other self-harm behaviours due to the term's inherent assumption that all episodes of non-fatal self-injury are not suicide intended (Arensman & Keeley, 2012; De Leo, 2011; WHO, 2016).

1.1.1.2. Self-harm

"Self-harm" is used in Europe (particularly in the United Kingdom, UK), Australia, and New Zealand; it is used broadly and appears more inclusive but without making any inference regarding the intention or motivation for the behaviour (Hawton et al., 2003; Morgan, 1979). Within the UK, the National Institute for Health and Care Excellence – NICE – cautions that in the clinical care and management of self-harm, separating self-harm into "suicidal" and "non-suicidal" should be avoided, as "motivation is complex and does not fall neatly into such categories" (NICE, 2012, p.14). Thus, self-harm has been defined as "an umbrella term for behaviour: 1) that results, whether by commission or omission, in avoidable physical harm to self and 2) that falls outside the limits of culturally accepted self-harming activities applying at the place and time of enactment" (Turp, 2002, p.216). This definition presents self-harm as a phenomenon with 'many faces', as it covers diverse forms of self-destructive behaviours including both non-suicidal self-injury and self-poisoning or overdosing, and less visible forms such as lack of self-care or reckless behaviour (Turp, 2002). Put differently, across Europe, Australia, and New Zealand, self-harm has been defined as encompassing self-poisoning and self-injury regardless of whether or not death is intended (Arensman & Keeley, 2012; Hawton et al., 2003; NICE, 2012).

In essence, the term self-harm combines all forms of intentional acts of non-fatal self-destructive behaviours without regard to their suicidal or non-suicidal intentions. However, it has been argued that the basic challenge with this broad term, self-harm, has to do with identifying the point where to draw the line of difference between other potentially harmful behaviours and self-harm (Linehan, 1997; Skegg, 2005). Again, based on evidence of some previous studies that some

intentional self-injurious behaviours are distinguishable in terms of their suicidal/non-suicidal dichotomy (e.g., Asarnow et al., 2011; Brausch & Gutierrez, 2010; Favazza & Rosenthal, 1993; Muehlenkamp, 2014; Nock, Prinstein & Sterba, 2009), some scholars have contended that combining disparate behaviours – as in the use of the term self-harm – can obfuscate important differences and thus negatively affect assessment, treatment, and future research (Favazza & Rosenthal, 1993; Fox et al., 2016; Klonsky & Lewis, 2014; Walsh, 2007).

Within the American nomenclature of the spectrum of self-injurious behaviours, ideations/thoughts and plans/planning are inclusive, but the European nomenclature considers actual acts or behaviours separately from thoughts/ideations and plans (O'Carroll et al., 2002; Silverman, 2014). Thus, "self-harm" focuses on actual acts of self-inflicted injuries and poisonings or overdoses and excludes the thoughts and planning of it. Potentially, this can limit our full understanding of the pathways to self-harm (Ougrin et al., 2010). Finally, the nomenclature "self-harm" is premised on the condition that the act must be intentional (i.e., harm must be intended), but the lethality and (suicidal or non-suicidal) intention of the act are disregarded. According to Ougrin et al. (2010) this stance appears to make self-harm somewhat paradoxical.

1.1.1.3. Practitioner view

Most recently, James and Stewart (2018) have reported exploratory evidence (based on a qualitative study of 18 front-line practitioners from 10 mental health wards in selected hospitals in the UK) about the understanding of clinicians regarding the suicidal/non-suicidal dichotomy and how front-line practitioners make the language differentiation between "self-harm" and "attempted suicide" in clinical practice. Thematic analysis of the interviews (James & Stewart, 2018) showed that most of the participants described "self-harm" and "attempted suicide" as distinct behaviours, and commonly drew the distinction based on characteristics of the act (e.g., lethality of self-harm method used, severity, etc.), disclosures of intention, and the level of distress observed. Whereas some of the practitioners believed that people who self-harm may also feel suicidal, all the practitioners revealed that "self-harm" and "attempted suicide" are often conflated with blurred boundaries and cannot be neatly separated in clinical practice owing to the challenges and complexities associated with these behaviours. Thus, James and Stewart (2018) conclude that although their evidence is against the dichotomous separation of self-harm behaviours into "suicidal" and "non-suicidal" acts, there is no common understanding of the boundaries between self-harm and attempted suicide among front-line clinicians.

1.1.1.4. Elements of self-harm nomenclature

The foregoing discussion shows that at the centre of the long-standing debates about the nomenclatures of self-harm are four elements, which also remain as the domains of the suicidal/non-suicidal debate: outcome of self-harm, method of self-harm, lethality of self-harm, and intention of self-harm (Crosby, Ortega & Melanson, 2011; O'Carroll et al., 2002; Ougrin et al., 2010; Silverman, Berman, Sanddal, O'carroll & Joiner Jr., 2007).

1.1.1.4.1. Outcome of self-harm

Any act of self-harm can lead to one of three plausible outcomes – survival without injuries, survival with injuries, or death. The outcome is self-harm when survival without injuries or survival with injuries occurs, whereas the outcome is suicide when the act leads to death. By far, outcome is possibly the indisputable and most objective domain (Goodfellow, Kõlves & De Leo, 2018a, 2018b; McKean, Pabbati, Geske & Bostwick, 2018; Ougrin et al., 2010; Silverman, 2006). Although previous studies have seen a consistent relationship between methods of self-harm and outcome, the relationship between outcome and intention of self-harm remains mixed (e.g., Nordentoft & Branner, 2008; Silverman, 2016) – this mixed relationship is discussed further under 'intention and self-harm' below. Outcome is a vital factor, but on its own, it is insufficiently independent for establishing a nomenclature of self-harm (De Leo et al., 2006; Goodfellow et al., 2018a, 2018b; Ougrin et al., 2010).

1.1.1.4.2. Method of self-harm

Method refers to the means or process used or the way a person self-harms (Silverman, 2016; Ougrin et al., 2010). Both hospital-based and community-based studies have found various methods of self-harm used by (young) people – for example, cutting, overdose, jumping from height, poisoning, among others (Beckman et al., 2018; Madge et al., 2008). But, unlike outcome, method of self-harm has been found to be a less objective criterion for establishing a nomenclature of self-harm. Typically, large scale cross-sectional and epidemiological studies depend basically on participants' subjective self-reports. This makes method of self-harm difficult to establish with confidence, as the reported methods cannot be verified or investigated (Ougrin et al., 2010; Kapur et al., 2013). Evidence shows that typically among people who self-injure (by cutting), the switching and use of other methods – such as poisoning – at their index episode is common (eg., Bergen et al., 2012; Birtwistle, Kelley, House & Owens, 2017; Lilley et al., 2008). As said about outcome of self-harm, the relationship between method of self-harm and

intention of self-harm also remains mixed, as methods of non-suicidal self-harm have been found be related to 3.7 times elevated risk of hospital re-admission and 1.8 to 5-fold increased risks of subsequent suicide death by the same or similar method (Bergen et al., 2012; Birtwistle et al., 2017). A recent systematic review of the literature shows that method switching is frequent across episodes, and often there is a lack of discernible patterns over time in patients (Witt, Daly, Arensman, Pirkis & Lubman, 2019). Thus, the motivation or intention of self-harm cannot be assumed based on the method of self-harm used (NICE, 2012). However, studies have shown consistent relationships between methods of self-harm and lethality (discussed next).

1.1.1.4.3. Lethality of self-harm

Basically, lethality refers to the biological or medical danger typically related to the method used to self-harm (O'Carroll et al., 2002; Ougrin et al., 2010). While methods of self-harm such as self-immolation, firearms and explosives, drowning, hanging, and jumping from a height, or in front of a moving train or a vehicle in motion may be deemed as having high lethality, scratching, wrist cutting, or overdose of some medications or poisons may be considered to be low lethality methods (McKean et al., 2018; Nordentoft & Branner, 2008; Ougrin et al., 2010). Lethality can be assessed by two unique, but overlapping dimensions: the act's physiological consequences, and medical procedures following the self-harm (Gvion & Levi-Belz, 2018). Some scholars have suggested that lethality and suicidal intent of self-harm should be considered as separate dimensions (Gjelsvik et al., 2017). Available evidence suggests that there is no clear consistent relationship between lethality of self-harm and intention (Silverman, 2016). For example, whereas some studies have reported associations between lethality and intention (e.g., Brown, Henriques, Sosdjan & Beck, 2004; Gvion, 2018; Haw, Hawton, Houston & Townsend, 2003; Horesh, Levi & Apter, 2012), others have found less or no relationship between the two domains (e.g., Douglas et al., 2004; Nordentoft & Branner, 2008). A recent hospital-based study has shown that some adolescents attempt suicide using non-suicidal self-injurious methods (e.g., cutting), while others use high-lethal methods – for instance, burning, etc. (Stewart et al., 2017).

1.1.1.4.4. Intention of self-harm

Intention refers to the aim a person wants to achieve by the act of self-harm: to die or for non-suicidal reasons – such as to get relief from a distressing situation, to make others change their mind, among others (Edmondson, Brennan & House, 2016; Hjelmeland & Knizek, 1999; NICE, 2012; Ougrin et al., 2010). "Motivations",

or “reasons” have also been used in the literature to mean the intention of self-harm (Hawton, Rodham & Evans, 2006; Hjelmeland & Knizek, 1999; NICE, 2012). Intention remains central to the suicidal/non-suicidal debate (Straiton et al., 2013; Silverman & De Leo, 2016). In the American conceptualisation of suicidal and non-suicidal injury, O’Carroll et al. (2002, p.32) proposed a ‘zero’ versus a ‘non-zero’ suicide intent dichotomy, a “nomenclature that distinguishes between zero intent to kill oneself on the one hand, and *any* level of intent, however trivial or intense, on the other”. Stated differently, if the intent to die is present, the act of self-injury is classified as “attempted suicide”; the absence of any suicidal intent makes the act “non-suicidal” (APA, 2013; ISSS, 2018; Muehlenkamp, 2014; O’Carroll et al., 2002; Silverman, 2016).

However, researchers who favour the use of the term “self-harm” advance several evidence-based arguments against the absent or present of (suicide) intent dichotomy. Consistently, studies have found that self-injury (among adolescents) is associated with both suicidal and non-suicidal reasons simultaneously, and sometimes overlapping (e.g., Burke, Hamilton, Cohen, Stange & Alloy, 2016; Doyle, Sheridan & Treacy, 2017; Hjelmeland et al., 2002; Nock, Joiner Jr., Gordon, Lloyd-Richardson & Prinstein, 2006; Rasmussen, Hawton, Philpott-Morgan & O'connor, 2016; Scoliers et al., 2009; Tapola, Wahlström, Kuittinen & Lappalainen, 2015; Whitlock et al., 2013). Again, intention may vary from one episode of self-harm to the next, making intent a fluid concept existing at various degrees and sporadic across time (James & Stewart, 2018; NICE, 2012; Nock et al., 2009). On the basis of this, NICE (2012) recommends that assumptions about intent should not be made based on a past pattern of self-harm; instead, each act of self-harm must be assessed separately to ascertain its motivation. Failure on the part of the clinician to do this can result in a misunderstanding of the behaviour and an interpretation that the patient finds dismissive or judgemental.

Similarly, within the same episode of self-harm, self-reported intentions can even change (Cooper et al., 2011; Kapur et al., 2013). Whereas some patients or research participants deny their intent to die (partly because of victimisation, stigma-related concerns etc.), others feign the intent to die in order to obtain a secondary gain, such as obtaining access to a mental health service to alleviate other distress (e.g., Berman, 2018; Freedenthal, 2007; Hom, Stanley, Podlogar & Joiner Jr, 2017; Levi-Belz et al., 2019; Shochet & O'Gorman, 1995; Silverman & Berman, 2014a). In a recent study involving 66 psychotherapy clients who reported concealing their suicidal ideations from their therapists, fear of involuntary hospitalisation was cited by 70% of the clients as the chief reason for the

concealment (Blanchard & Farber, 2018). It has also been found that people who self-harm may even be unclear about their intentions, a situation which potentially can lead researchers and clinicians to make different judgements regarding the seriousness of the suicidal intent of the same self-harm episode (Hawton, Cole, O'Grady & Osborn, 1982; Lindgren, Öster, Åström & Graneheim, 2011).

Finally, both earlier and recent scholars who favour the suicidal/non-suicidal dichotomy have identified various ways by which suicidal intentions can be assessed – for example, clinician-rated measures, self-report measures, interviews, among others (Beck, Beck & Kovacs, 1975; Beck & Steer, 1989; Gutierrez & Osman, 2008; Linehan, Comtois, Brown, Heard & Wagner, 2006; May & Klonsky, 2013; Pierce, 1977).

A key question which remains extensively unaddressed is “whose voice should determine whether a self-injurious act is suicidal or non-suicidal: the patient’s/research participant’s or the researcher’s/clinician’s?” (Berman & Silverman, 2017; Kapur et al., 2013; Sommers-Flanagan & Shaw, 2017; Straiton et al., 2013). Very recent studies have found that, in assessing suicide risk, many clinicians fear to ask clients about suicidal ideations and intent to die by suicide, even when warning signs of suicide are clear; and where they ask about suicidal ideations, most clinicians tend to ask negatively worded questions (e.g., “no thought of harming yourself?”), thereby eliciting client responses that are biased towards reporting no suicidal ideation (Jahn, Quinnett & Ries, 2016; McCabe, Sterno, Priebe, Barnes & Byng, 2017; Quinnett, 2019; Roush et al., 2018). Freedenthal (2007, p. 57) candidly observed this challenge thus, “assessing a person’s intent to die in a suicide attempt is crucial for risk assessment and research, yet suicidal intent is notoriously difficult to measure”.

1.1.1.5. Measurement of Self-harm

The key rationale for measuring self-harm among young people is anchored in the fact that relative to other age groups, self-harm remains the single strongest risk factor for suicide in young people; for many young people, the years following self-harm is associated with heightened suicide risk (Hawton et al., 2012; Hom et al., 2016; Olfson et al., 2018; Mars et al., 2019). Thus, measurement of self-harm helps clinicians to identify patients at risk of (repeated self-harm and) suicide and enables researchers to gain better understanding of the proximal and distal factors related to self-harm (Hom et al., 2016; Millner, Lee, & Nock, 2015; Randall, Rowe, & Colman, 2012; Randall, Rowe, Dong, & Colman, 2014). Generally, the hidden characteristic of self-harm (most of self-harm occurs in secret and not presented to

hospitals) and the transient nature of the behaviour present a critical limitation to reliable and accurate measurement (Nock, 2012; Owens, 2010). However, several strategies have been developed to advance the assessment of self-harm in both clinical and research contexts. These methods include the use of interviews, and self-reports approaches. Whilst there is no single agreed upon measure among researchers, there is a sharp disagreement across clinical practice guidelines regarding the most reliable methods for assessing self-harm (Bernert, Hom, & Roberts, 2014).

The interview assessment method often involves an in-person, face-to-face clinical screening using clinician-rated measures (e.g., Kaplan et al., 1994; Randall et al., 2014). Although this approach yields first-hand responses to the nature, timing, motivation and circumstances of past self-harm, some patients tend to provide socially desirable answers including lying (Blanchard & Farber, 2018; Shochet & O'Gorman, 1995). Recent systematic reviews show that in both adults and young people several self-report and interviewer-rated measures, scales and behavioural checklists have been developed (Borschmann et al., 2012; Chávez-Flores et al., 2019; Drzał-Fiałkiewcz et al., 2017; Latimer et a., 2013). Among adolescents, at least seven standardised clinician-rated assessment tools have been identified – e.g., the Self-injurious Behaviour Questionnaire, the Suicide Attempt and Self-injury Interview (Chávez-Flores et al., 2019; Drzał-Fiałkiewcz et al., 2017).

The self-report approach to self-harm assessment usually involves administering self-report questionnaires or behavioural checklists to non-clinical survey participants, to assess – among other things – the history/prevalence of self-harm, correlates and reported reasons for the behaviour (e.g., Madge et al., 2008; Muehlenkamp et al., 2012; Swannell et al., 2014). Given the sensitive and stigmatised nature of self-harm, self-report (anonymous) measures have the advantage of providing informants ‘privacy’ to respond to questions about their experiences, even though retrospective recall of responses may be biased (Hawton et al., 2006). There are at least eight standardised self-report questionnaires for assessing self-harm in adolescents – e.g., the Deliberate Self-harm Inventory, the Self-harm Behaviour Questionnaire (Chávez-Flores et al., 2019; Drzał-Fiałkiewcz et al., 2017).

Generally, whereas advances have been made in the development of multi-item assessment measures (Chávez-Flores et al., 2019; Latimer et al., 2013), recent years have witnessed mainly the use of single-item self-report measures in research assessing the presence and intention of self-harm among young people

(Ciprianao et al., 2017; Muehlenkamp et al., 2012; Valencia-Agudo et al., 2018). Compared to multi-item measures or behavioural checklists, single-item measures require less time to answer and are more favourable for use in epidemiology, but lead to underestimation of the prevalence of self-harm in young people and are more prone to self-harm misclassification (Hom et al., 2016; Muehlenkamp et al., 2012; Miller, Lee, & Nock, 2015).

More recently, technological advances have enabled the development of ecological momentary assessment methods [the use of real-time digital monitoring sensors and apps (e.g., smartphones), and wearables (e.g., to record heart rate)] and performance-based assessments. These use self-harm related cognitions and laboratory-based behavioural tasks (e.g., implicit association tests) in assessing self-harm and suicidal intentions (Ammerman et al., 2018; Czyz et al., 2019; Kleiman et al., 2017; 2018; Kleiman & Nock, 2018; Randall et al., 2013). However, there is much controversy surrounding the reliability of these assessment methods; thus, there is currently no agreed upon objective, practical, and ethically sound methods by which self-harm (and suicidal intent) can be assessed (Berman & Carter, 2019; Berman & Silverman, 2014b; Kapur et al., 2013; Large et al., 2017; Mullinax et al., 2018; Nestadt et al., 2018; Ougrin et al., 2010; Silverman & Berman, 2014; Torous et al., 2018a, 2018b).

1.1.1.6. Conclusion and nomenclature of self-harm in this thesis

According to Linehan (1997), the rampant definitional ambiguities and heterogeneity in the area of intentional, fatal, and nonfatal self-destructive behaviour research have at least two negative effects: 1) cross comparison of studies in the area is made impossible, as many researchers are unable to operationally define their terms; and 2) there is a heightened tendency to wrongly classify death-intended behaviours as non-suicidal and as suicidal when those behaviours are not death-intended, owing to the use of terms which imply or do not imply intent to die (e.g., attempted suicide, deliberate self-harm etc.) in the face of the unavailability of reliable or valid measures of actual intent.

Therefore, recently, WHO (2016) has recommended that, “at the global level, terminology should be approached with a certain amount of flexibility, taking into account varying cultural contexts and the fact that different countries may choose terms that translate more accurately in their languages” (p.60). In this vein, “although *self-harm* is not a perfect descriptor” (Kapur et al., 2013, p.328), it has been tipped as the terminology to use (Arensman & Keeley, 2012; Kapur et al., 2013; NICE, 2012; RCPsych, 2014; WHO, 2016). “Self-harm” encompasses a spectrum of behaviour that ranges in intent and motivation and the term is

particularly appropriate for the purposes of epidemiology and surveillance, as it offers “a common ground internationally” (Arensman & Keeley, 2012; WHO, 2016, p.59). More so, service users, research participants and other external groups have been found to prefer the use of the term “self-harm” to other terms such as “deliberate self-harm” (Anderson, Woodward & Armstrong, 2004). Hence, “in the UK and elsewhere across the globe, the preferred term is self-harm” (Berman & Silverman, 2017, p.214).

Therefore, for this PhD thesis, the term “self-harm” is preferred, adopted and defined as any intentional “act of self-poisoning or self-injury carried out by an individual irrespective of motivation” (NICE, 2012, p.14). Self-poisoning in this context refers to “the intentional self-administration of more than the prescribed dose of any drug, whether or not there is evidence that the act was intended to result in death. This also includes poisoning with non-ingestible substances and gas, overdoses of ‘recreational drugs’” (Hawton et al., 2003, p.988). Self-injury is considered as any physical injury which has been intentionally self-inflicted (Hawton et al., 2003).

Within this definition (NICE, 2012), self-harm is viewed as covering a broad spectrum of acts of self-destructive behaviours – excluding thoughts or ideations – which could potentially lead to bodily damage, and in which harm to self is intended (e.g., cutting, overdosing, poisoning etc.). However, the classification of the range of behaviours excludes: (i) unintended self-injurious behaviours that can result in self-inflicted physical or psychological harm (e.g., smoking, recreational drug use, excessive alcohol consumption, eating disorders, getting into fights, tattooing, body piercing etc.); (ii) intended but socially or culturally sanctioned self-injurious behaviours resulting from religious or tribal ritual or practice (e.g., fasting, tribal scarification, manhood rituals), political or social protest (e.g., hunger strikes); and (iii) intended self-injurious behaviours which are not sanctioned by the broader sociocultural context but are acceptable and sanctioned by the subcultures (e.g., cult groups, goth subcultures, emo subcultures etc.) within which they occur (Bowes *et al.*, 2015; Favazza, 2011; Hawton et al., 2012; House, 2019; Hughes et al., 2018; Trnka et al., 2018; Zdanow & Wright, 2012).

Finally, previous research has established that the specific self-destructive acts and methods of self-harm adopted are partly influenced by the context and culture within which the behaviour occurs (e.g., Ajdacic-Gross et al., 2008; Beautrais, 2000; Benjamin, David, Iyadurai & Jacob, 2018; Eddleston & Phillips, 2004; Eddleston et al., 2006). It is thus worth noting that in this thesis, particularly, in the primary studies (Chapter 3 and Chapter 4), the definition of self-harm

adopted (NICE, 2012) was not closed or strictly limited to only intentional acts of self-poisoning and self-injury, but open to the inclusion of the meaning and methods of self-harm from the perspectives of the participants. This was informed by three other reasons. Firstly, the meaning of self-harm and the choice of self-harm methods may be driven by the cultural, philosophical, religious factors, and the general context within which the behaviour occurs. However, there are no studies from sub-Saharan Africa (and LAMICs generally) contributing to the conceptualisation of self-harm (Grandclerc et al., 2016; Aggarwal & Berk, 2015; Hjelmeland et al., 2008; Kang, 2019; Kelada et al., 2018; Silverman & De Leo, 2016). Secondly, the 'pioneering' nature of this study within its geographic scope (at least the Ghanaian context) necessitated an additional aim to also document the participants' (possibly diverse) perspectives regarding the specific acts constituting self-harm. In the self-report anonymous survey (Chapter 3), this was done by making a checklist of all traditional methods of self-harm commonly reported in previous research – from high in-come countries, and those reviewed from sub-Saharan Africa reported in Chapter 2 of this thesis – in addition to an "other" category space, allowing the participants to specify any other methods they might have used to self-harm. Finally, often, the conceptualisations and definitions of self-harm are formulated by professionals and rarely include the perspectives of persons who actually self-harm, a situation that potentially allows certain forms of self-harm to go unnoticed during assessment and treatment (Straiton et al., 2013).

In sum, informed by the guidelines suggested in previous studies (i.e., Hawton et al., 2006; Morey, Corcoran, Arensman & Perry, 2008) for categorising adolescent respondents' descriptions of self-harm, the definition of self-harm used in this thesis refers to an act with a non-fatal outcome in which a person does one of the following with the intention of causing harm to themselves:

i. initiates a behaviour (such as jumping from a height, self-cutting, hanging etc.) that they intend to cause self-harm; and/or
ii. ingests a substance more than the prescribed or generally recognised therapeutic dose; and/or
iii. ingests a recreational or an illicit drug[1]; and/or
iv. ingests a non-ingestible substance or object.

Thus, specifically, this definition includes:

[1] For illicit/recreational drugs, ingestion of any amount was considered to be in excess of the prescribed or generally recognised therapeutic or effective dose.

- self-cutting, hanging, strangulation, suffocation, jumping or throwing self, electrocution, hitting body or self-battery, burning, inhalation/sniffing, starvation, stopping of medication or required medical treatment, shooting, drowning;
- overdose;
- consuming a recreational drug;
- ingesting a non-ingestible substance or object; and
- The definition excludes episodes of self-harm by individuals who do not understand the meaning or the outcome of their act, for example because of a learning disability.

1.1.2. Definition of Adolescence

Adolescence refers to the period of transition between childhood and adulthood accompanied by significant biological, psychological, and social developments (Casey, Jones & Hare, 2008; Ernst, Pine & Hardin, 2006). Although adolescence has been described as a period of opportunities (WHO, 2011), it also represents a time of various challenges for the developing individual, as the period is associated with increased emotional reactivity and sensitivity, risky choices and behaviours, vulnerability and adjustment due to the multiple developmental changes linked to the period (Buitelaar, 2012; Casey et al., 2008; Cassels & Wilkinson, 2016; Steinberg, 2004, 2005). In many countries of the world, including those in Africa, persons aged from 18 years are legally considered adults, whist those below 18 years are considered children (Patton et al., 2016). However, there are no universally agreed definitions for the various categories of young persons within the general population (e.g., adolescents, young people, youth).

Compared to cognitive and physical characteristics, chronological age is the widely used basis to define various categories of young persons within the general population. For example, WHO (2009, p.2) defines “adolescents” as “individuals between 10 and 19 years”, whereas the term “young people” is used to denote persons between 10 and 24 years, and “youth” is used to refer to those aged between 15 and 24 years. The disagreements and variations persist even with the use of chronological age. For example, Hawton et al. (2012) and Sawyer et al. (2018) observe that the upper age limit used in the definition of adolescence varies between 18 and 25 years; 25 years has been suggested recently by most neuroscientists and developmental psychologists as the appropriate cut-off age for late adolescence (Berk & Meyers, 2015; Goddings et al., 2014; Santrock, 2015).

In Africa particularly, and across LAMICs more generally, the definition of “young persons” remains even more challenging, as the combination of

chronological changes, physical development, cognitive development, adulthood social transitions (including marriage and parenthood) and economic independence and self-sufficiency must be considered (Ampofo, Okyerefo & Pervarah, 2009; Arnett, 1994, 2000; Arnett & Taber, 1994; Gilmore, 1990; Miescher, 2005). In Africa, “even twenty or thirty-year old sons and daughters are looked on as ‘children’ by reason of their relatively limited experiences in life” (Gyekye, 2003, p.85). According to Lai (2011), within LAMICs, individuals between ages 23 and 25 years are still financially dependent on their families, hence are considered young persons.

Therefore, in this thesis “adolescents”, “young people”, “children and young people”, “children and young persons”, “children and youth”, and “young persons” are used interchangeably to mean persons aged between 10 and 25 years. Previous studies suggest that this age range ensures consistency in terms of human development, as comparatively late adolescents are close in age to young adults (Aggarwal et al., 2017; Hawton et al., 2012; Patton et al., 2016; Sawyer et al., 2018).

1.2. Background to the Study

Consistently, epidemiological data show that up to about 50% of all mental health problems in adulthood have their onset in adolescence (Belfer, 2008). Globally, mental health problems account for 30% of the burden of non-fatal disease and affect 10 – 20% of children and adolescents in all societies (Kieling, et al., 2011; Mnookin et al., 2016; Polanczyk et al., 2015). Self-harm is a notable public health problem reported mostly during adolescence, with direct deleterious effects on adolescents, their families, education, employment, and peer related outcomes, among others (Brown & Plener, 2017; Ferrey et al., 2016; Hawton & O'Connor, 2012; Hawton et al., 2012; Petroni, Patel & Patton, 2016; Plener et al., 2015). Self-harm during adolescence, thus, represents a serious public health challenge faced by many high-income countries and LAMICs alike (Hawton, Rodham & Evans, 2006; Hawton et al., 2012).

Evidence from both clinical and non-clinical contexts has consistently shown that self-harm is the strongest single risk factor and predictor of suicide in adolescents (Castellví et al., 2017; Coppersmith et al., 2017; Franklin et al., 2017; Franklin & Nock, 2016). The adulthood of adolescents who survive self-harm has been found to be associated with various negative outcomes related to their mental health and social well-being. For example, evidence from recent longitudinal studies (Borschmann et al., 2017; Jokinen et al., 2018; Kiekens et al., 2017; Mars et al.,

2019; Moran et al., 2012; Olfson et al., 2018), reviews of longitudinal course of self-harm (e.g., Plener et al., 2015) and case-control studies (e.g., Steeg et al., 2019) indicates that, although self-harming behaviours resolve spontaneously and decline in young adulthood for some adolescents who do not experience any negative outcome or do not go on to repeat the behaviour in young adulthood, a significant proportion of adolescents who self-harm experience an escalated risk of continued self-harm during young adulthood and other negative outcomes, including major depression and suicide. Annually, an estimated 71,000 adolescent suicides (representing about 6.3% of all deaths among young people) are recorded globally, ranking suicide as the second leading cause of deaths in females between 10 – 24 years and the third major cause of death in males within the same age bracket (Naghavi & the Global Burden of Disease Self-Harm Collaborators, 2019; Patton et al., 2009; Petroni, Patel & Patton, 2015; WHO, 2014a).

1.2.1. Epidemiology of Self-harm in Adolescents

International epidemiological evidence and country-level data (particularly, from high-income countries) show significant variations in the prevalence and incidence of self-harm in adolescents. However, generally, the evidence indicates that the occurrence of self-harm (usually, self-cutting) among adolescents is higher – and often hidden – within the community context; only a few who self-harm, particularly, by self-poisoning, present to hospitals for treatment (Hawton et al., 2012; Muehlenkamp, Claes, Havertape & Plener, 2012; Swannell, Martin, Page, Hasking & St John, 2014; WHO, 2014a). Mental health professionals are making various efforts to deal with this situation. For example, the recent inclusion of nonsuicidal self-injury in the DSM-5 was partly informed by the high prevalence of the behaviour in non-clinical populations (APA, 2013; Riggi et al., 2017).

In specific terms, non-clinic-based studies of self-harm among adolescents in high-income countries report that the prevalence estimates of the behaviour vary between 1.5% (Moran et al., 2012) and 67.3% (Calvete, Orue & Sampedro, 2017), whereas clinic-based studies report prevalence estimates ranging between 37% (Groschwitz et al., 2013) and 60% (Kaess et al., 2013). Cross-country comparative primary studies across Europe and Australia show 12-month prevalence estimates ranging from 4.1% to 38.6%, with higher prevalence estimates among female than male adolescents (Brunner et al., 2014; Kokkevi, Rotsika, Arapaki & Richardson, 2012; Madge et al., 2008).

Within the past decade, systematic reviews and meta-analyses of the international literature from high-income countries have reported similar estimates of the prevalence of self-harm in adolescents. Jacobson and Gould (2007) reported a lifetime prevalence estimate range of 13.0% to 23.2%, while Muehlenkamp et al. (2012) reported that, approximately, 2 out of 10 adolescents have self-harmed at least once in their lifetime. In 2014, Swannell and colleagues obtained a pooled lifetime prevalence of 17.2%. Cipriano, Cella and Cotrufo (2017) report that the lifetime prevalence of self-harm among adolescents ranges from 7.5 to 46.5%, but a most recent systematic review shows a lifetime prevalence range of 5% – 48.7%, with an average of 16.4%; a 12-month prevalence range of 6%-33.9%, with a mean of 18.2% (Valencia-Agudo, Burcher, Ezpeleta & Kramer, 2018).

It must be noted at this point that the foregoing primary studies and systematic reviews have focused mainly on school-going adolescents and young people in high-income countries. Among out-of-school, homeless and street-connected children and young people, the available systematic review has found a prevalence estimate varying between 9.3% and 69% (Hodgson et al., 2013).

To date, only two systematic reviews reporting the prevalence estimates of self-harm in adolescents across LAMICs have been published: one focused on self-harm mainly among in-school children and youth (Aggarwal et al., 2017), and the other involves primary studies reporting on the health status of street-connected children and youth (Woan, Lin, & Auerswald, 2013). The systematic review by Aggarwal et al. (2017) included 27 primary studies from LAMICs, of which two provided evidence from Africa. According to Aggarwal et al. (2017), the 12-month prevalence of self-harm among adolescents in LAMICs varies widely from 3.2% to 31.3%. Woan et al. (2013) included 108 primary studies, out of which four (with none from Africa) provided estimates of the prevalence of self-harm among street-connected children and youth in LAMICs. Woan et al. (2013) observe lifetime prevalence estimates of self-harm varying between 10% and 23.8% among street-connected children and youth, a range of estimate lower than what has been found in high-income countries – 9.3% and 69% (Hodgson et al., 2013) and among in-school adolescents in LAMICs (Aggarwal et al., 2017). It's worth pointing out that, put together, even though these prevalence estimates found in LAMICs are comparable to the estimates from high-income countries, the prevalence estimates of self-harm translates into higher proportions of adolescents in LAMICs, as there are more adolescents in these countries than in high-income countries. Also, whereas the results of these studies indicate that self-harm in adolescents may be a global public health concern, the substantial variations in the ranges of

prevalence estimates reported could be, partly, due to the terms of self-harming behaviours used and how they were measured, and methodological or analytical artefact.

1.2.2. Factors Associated with Self-harm in Adolescents

Recent systematic reviews and meta-analyses have identified self-harm in adolescents to be associated with the interplay among many (and sometimes overlapping) factors: psychological, biological, cultural, psychiatric, genetic, and social (e.g., Cipriano et al., 2017; Evans, Hawton, & Rodham, 2004; Hawton et al., 2012; Plener et al., 2018). These factors can be experienced at the personal level, within the family, school, interpersonal relationships, or within the general community contexts. Table 1.1 summarises the key risk factors or correlates of self-harm in adolescents found in recent systematic reviews and meta-analyses of the international literature (e.g., Aggarwal et al., 2017; Fox et al., 2017; John et al., 2018; Hawton et al., 2012; Hughes et al., 2018; Karanikola et al., 2018; Marchant et al., 2017; Plenner et al., 2018; Serafini et al., 2015; Woan et al., 2013).

Researchers have made several theoretical formulations towards the comprehension of self-harm among adolescents. Some scholars suggest that the overlapping and interactive nature of the correlates and risk factors make the application of the stress–diathesis explanation a good fit for a theoretical understanding of self-harm in adolescents (Brodsky, 2016; Evans et al. 2004; Hawton et al., 2012; Mann, Waternaux, Haas & Malone, 1999). In this formulation, exposure to stress (e.g., bullying victimisation, family discord etc.) interact with diathesis factors (e.g., problem-solving and affect-regulation difficulties, female gender, borderline personality disorder etc.) leading to the enactment of self-harm. Converging evidence based on systematic reviews of self-harm studies have found that adolescent self-harm persists because the behaviour serves an emotion regulation function (Klonsky, 2007; Klonsky & Muehlenkamp, 2007; Nock, 2009, 2010; Taylor et al., 2018). The functional theory proposes that the acute negative affect and arousal (e.g. anger, anxiety etc.) which precedes self-harm is alleviated when self-harm is enacted. In other words, within this view, the desire to maintain decreased negative affect, while bringing about relief and more positive physical or emotional sensations leads to the enactment and maintenance of self-harm. Thus far, there is no an agreed-upon theoretical model of self-harm in the literature, mainly due to the complex nature of self-harm. Thus, the search is still on-going for a more comprehensive, robust theoretical model to explain the acquisition and maintenance of self-harm among adolescents.

Table 1.1: Risk factors/correlates of self-harm in adolescents

Personal factors	Family related factors	School related factors	Interpersonal factors	Other factors
▪ Adolescence. ▪ Female gender.***** ▪ Illicit drug and alcohol misuse. ▪ Living alone. ▪ Hopelessness. ▪ Suicidal ideation ▪ Low self-esteem. ▪ Perfectionism. ▪ Impulsivity. ▪ Engagement in survival sex.***** ▪ Adverse childhood experiences. ▪ Problem-solving and affect-regulation difficulties. ▪ Mental disorder (particularly, anxiety, depression, attention deficit hyperactivity disorder, eating disorders, internet addiction, borderline personality disorder). ▪ Non-heterosexual orientation (being lesbian, gay, bisexual, or transgender sexual). ▪ Personal history of self-harm. ▪ Medical health problems. ▪ Aggression/hostility. ▪ Sleep problems.	▪ Adolescent-parent conflict. ▪ Parental separation or divorce. ▪ Family history of suicidal behaviour. ▪ Parental mental disorder. ▪ Parental death. ▪ Family discord. ▪ Low socio-economic status of family.	▪ Bullying victimisation ▪ Poor school performance. ▪ Higher truancy or school absenteeism	▪ Difficulties in making or keeping friends. ▪ Sexual or physical abuse.***** ▪ Experience of self-harm among peers. ▪ Romantic relationship problems. ▪ Cyber bullying ▪ Websites/media with self-harm or suicide content. ▪ Belonging to an Emo, Goth, Punks or Metaller subculture.	▪ Unemployment.

***** Shown to be related to self-harm in street-connected children and youth in LAMICs

1.2.3. Reported Reasons for Self-harm in Adolescents

Adolescent participants in previous primary studies have reported various reasons for their self-harm (Doyle et al., 2017; Madge et al., 2008; Rasmussen et al., 2016; Rodham et al., 2004; Scoliers et al., 2009; Turner, Chapman & Layden, 2012). Often adolescents report a combination of interpersonal (e.g., to seek support, communicate distress, influence others, etc.) and intrapersonal reasons (e.g., to attain emotional/cognitive relief, punish self, etc.). Several studies have underscored the need to explore the various meanings participants and patients report for self-harm and the individualised nature of these multiple meanings (e.g., Doyle et al., 2017; Hawton et al., 2012). Table 1.2 shows the predominant reasons for self-harm reported by adolescents as found by recent systematic reviews (Edmondson, Brennan & House, 2016; Taylor et al., 2018) and primary studies (Doyle et al., 2017; Rasmussen et al., 2016). The most recent meta-analysis (Taylor et al., 2018) shows intrapersonal reasons related to emotion regulation as the most commonly reported reasons for self-harm. Intrapersonal reasons or motives relate to desired changes in one's internal state, including changes in sensations, emotional states or thoughts, while interpersonal reasons include desired changes within one's social environment, such as communicating distress to someone, or to influence the behaviour of others or to punish self or others (Scoliers et al., 2009; Taylor et al., 2018; Turner, Chapman & Layden, 2012).

Table 1.2. Reported reasons for self-harm in adolescents

Intrapersonal reasons	Interpersonal reasons
▪ Manage distress/affect regulation ▪ E.g., "to get relief from a terrible state of mind". ▪ Protect self ▪ To die ▪ Achieve a sense of personal mastery ▪ Self-punishment. ▪ Expressing and coping with sexuality. ▪ Induce or reduce dissociation ▪ Avert suicide (self-harm as warding off thoughts and acts of suicide). ▪ Defining, maintaining or exploring personal boundaries (to not feel like an outsider). ▪ Experimentation (it was just an experiment). ▪ Sensation-seeking and self-gratification experience (comforting, it makes me feel warm and just nice). ▪ Validate self (I feel powerful that I am immune to being hurt by it [the cutting]).	▪ Exert interpersonal influence. ▪ E.g., – "To find out whether someone really loved me" – "To get my own back on someone" – "To frighten someone" – "To seek help from someone". ▪ Communicating personal distress. ▪ E.g., – "To show how desperate I was feeling" – "To show my pain to others" ▪ Protect others (I do it because I don't want to hurt somebody else). ▪ Punish others (look what you made me do). ▪ Validate others

1.2.4. Problem Statement

1.2.4.1. Self-harm research in Africa

Little is generally known – through research – about the state of the mental health of children and young people within LAMICs, and more specifically about self-harm in adolescents in LAMICs, where 90% of the world's children and adolescents live (McKinnon, Gariépy, Sentenac & Elgar, 2016; Patel, 2007; Patel, Flisher, Nikapota & Malhotra, 2008). More significantly, the available systematic review and meta-analysis providing evidence on the prevalence estimates of child mental health problems in sub-Saharan Africa (Cortina, Sodha, Fazel & Ramchandani, 2012) suggests that one in seven children and adolescents in sub-Saharan Africa have significant mental health difficulties, and one out of 10 have a specific psychiatric disorder; overall, the study identified psychopathology in 14.3% children and adolescents in sub-Saharan Africa. Notably, however, the meta-analysis by Cortina and colleagues (2012) included only 10 studies from 6 out of the 46 countries within sub-Saharan Africa, while the review's search strategy was applied to global academic databases only, to the exclusion of regional and continental databases within Africa. Generally, though, the mental health of young people in the sub-region is under-researched, hence this young population is largely overlooked in the building of empirical public health databases and intervention efforts (Kabiru, Izugbara & Beguy, 2013; Omigbodun & Belfer, 2016; Sommer, 2011).

Across the African continent – and for that matter the sub-Saharan Africa sub-region – although research aimed at understanding the profile of self-harm and suicide is still forming, largely, such research efforts have been limited for decades by many factors (including but not exclusive to): the political and socio-economic instability that characterise many parts of the continent, lack of research funds and infrastructure, unavailability of professionals and research experts (who are originally Africans), limited and out-of-date studies, research designs and assessment measures/instruments fraught with poor scientific rigour, with most studies being descriptive in form, limited reliable death registers and suicide autopsy reports, lack of self-harm and suicide surveillance and monitoring systems and data, and insufficient intra-African collaborative research (Glenn et al., 2019; Kinyanda & Kigozi, 2005; Lester, 2011; Mars, Burrows, Hjelmeland & Gunnell, 2014; Schlebusch, Burrows & Vawda, 2009).

1.2.4.2. Adolescent self-harm research in Ghana

Adolescent (mental) health research has not received much attention in Ghana (Asante et al., 2017; Read & Doku, 2012) and as such there are no official statistics on the prevalence estimates, trends and the general epidemiology of self-harm among this population, even though anecdotal evidence (e.g., media reports) indicate that adolescent self-harm and suicide represent a frequent reality in the country (Knizek, Akotia & Hjelmeland, 2011; Quarshie, Osafo, Akotia & Peprah, 2015; Read & Doku, 2012). Again, the developing research efforts have focused largely on suicide, particularly, the attitudes and cultural meanings of suicide (e.g., Osafo, Akotia, Boakye & Dickon, 2018; Osafo, Knizek, Akotia & Hjelmeland, 2012), the intercultural differences in predictors, determinants and gender differences in suicide (e.g., Adinkrah 2012, 2011a; Eshun, 1999, 2000, 2003), while more recently some studies have examined the lived experiences and motivations of adults who attempt suicide (Akotia, Knizek, Hjelmeland, Kinyanda & Osafo, 2019; Hjelmeland et al., 2008; Osafo, Akotia, Andoh-Arthur & Quarshie, 2015).

1.2.5. Rationale for the Study

So far, the available research from Ghana on intentional self-harm behaviours has focused only on attempted suicide and mainly among adult populations, with very little research efforts on much more identifiable vulnerable groups such as children and adolescents (Asante, Kugbey, Osafo, Quarshie & Sarfo, 2017; Baiden et al., 2018; Quarshie, Osafo, Akotia & Peprah, 2015). There have not been continuous published clinical or non-clinic-based studies on self-harm in the last 40 years (Quarshie, 2016). The available extant studies (i.e., Adomako, 1975; Roberts & Nkum, 1989) were based on hospital admission case notes of mainly adult patients, the contextual validity of which may not reliably apply to Ghana's current clinical or community situations. Additionally, although self-harm and death-intended motives have been suspected in adolescent injury-related mortality studies in Ghana (e.g., Ohene, Tettey & Kumoji, 2010, 2011), to date, there is no research on self-harm as a public health challenge, particularly, among young people; there is also a lack of epidemiological studies on the phenomenon across the general Ghanaian population (Quarshie et al., 2015; Read & Doku, 2012).

Recently, key stakeholders, including researchers, clinicians, and other professionals have underscored the urgent need to focus research attention onto the mental health issues of children and adolescents in countries across sub-Saharan Africa (Kabiru et al., 2013; Omigbodun & Belfer, 2016; Owen, Baig, Abbo & Baheretibeb, 2016; Patel, Flisher, Nikapota, & Malhotra, 2008; Rohde, 2011;

Sharan et al., 2011). At the global level, Goal 3 of the UN Sustainable Development (SDG 3) seeks to ensure healthy lives and promote well-being for all at all ages (UN Statistical Commission, 2016, p.4). Target 4 of SDG 3 is to reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being, by the year 2030. Reduction in suicide mortality rate is a key indicator of this target, SDG 3.4.2 (UN Statistical Commission, 2016). Towards this indicator of suicide reduction, the new "Lancet" Commission on global mental health and sustainable development has charged all countries, particularly, those within low- and middle-income classification to, among other actions, scale up (public) mental health research which translates into real-world effects (Patel et al., 2018). Given that self-harm is the strongest risk for suicide in adolescents (e.g., Hawton et al., 2012; Olfson et al., 2018), the implication is that any sound research focused on understanding adolescent self-harm and informing prevention strategies will potentially contribute to the attainment of SDG 3.4.2 by the year 2030.

Therefore, this thesis is partly in response to the SDG 3.4.2 global call, the sub-regional call to increase research on mental health issues in children and adolescents in sub-Saharan Africa, and partly borne out of the need for contemporary community-based evidence on the prevalence estimates and factors associated with self-harm among adolescents in Ghana. This, in turn, is hoped to inform expansive future research efforts in the area for a nuanced understanding of the phenomenon of self-harm and to inform intervention and prevention programmes in the country.

1.2.6. Research Context and Geographical Scope

This thesis covers three empirical studies: a systematic review (Chapter 2) and two primary studies (Chapters 3 & 4). Sub-Saharan Africa (also called Black Africa) was the setting and geographical scope of the systematic review, whereas the Greater Accra region of Ghana in West Africa was the setting for the two primary studies.

1.2.6.1. Sub-Saharan Africa

Geographically, sub-Saharan Africa lies south of the Sahara Desert on the African continent with 46 countries[2] (Figure 1.1). In this thesis, much of the researcher's

[2] The list of countries in sub-Saharan Africa considered for this study was based on the regional classification and list of 46 countries within the region provided by the United Nations Development Programme (UNDP, 2018, p. 108) and the World Health Organization (WHO, 2014a, p. 88).

initial understanding regarding the phenomenon of self-harm in young people was based on literature from Europe (particularly, the UK), north America, Australia, and New Zealand (e.g., Brunner et al., 2014; Edmondson et al., 2016; Klonsky, 2007; Madge et al., 2008, 2011; Muehlenkamp et al., 2012; Plener et al., 2018; Swannell et al., 2014; Zubrick et al., 2016). Therefore, to contextualise the primary studies of this thesis, a systematic review of the available and accessible previous evidence on self-harm among adolescents in sub-Saharan Africa was initially conducted (Chapter 2).

1.2.6.2. Why sub-Saharan Africa?

Sub-Saharan Africa is commonly known as one of the most impoverished regions of the world, which records the highest global disease burden. It is the third most populous region of young people in the world, with 15% of the world's young people, representing 32% of the total population of sub-Saharan Africa (Population Reference Bureau, 2013; The Commonwealth, 2016). Between 2010 and 2015, sub-Saharan Africa recorded the highest improvement in its overall youth development indices, compared to the nine world regions (The Commonwealth, 2016; UNDP, 2016). However, the sub-region continues to have the lowest ranking in terms of youth development: young people within sub-Saharan Africa continue to face multiple challenges, including (but not limited to) unemployment, child labour, exploitation, neglect, abuse, illiteracy and educational inequality, health problems (including sexual and reproductive health challenges), child marriage and early births, and poverty (e.g., African Union, 2017; Cluver et al., 2016; Harber, 2017; Hounmenou & Her, 2017; The Commonwealth, 2016; UNFPA, 2016).

There is evidence to suggest that the consumption of alcohol and psychoactive substances (e.g., cannabis, amphetamines, non-prescribed psychoactive prescription medication etc.) is common in young people in sub-Saharan Africa (Ferreira-Borges, Parry & Babor, 2017; Kanyoni et al., 2015; WHO-Africa region, 2017). Although some sub-Saharan Africa countries have alcohol and drug control policies, the full enforcement of these regulations remains limited (Ferreira-Borges, Esser, Dias, Babor & Parry, 2015; Patton et al., 2016; WHO, 2014c). Thus, mental, neurological, and substance use disorders are also common among young people in sub-Saharan Africa (Embleton et al., 2013; Erskine et al., 2017; Patel et al., 2007, 2015).

Figure 1.1. Map showing countries within sub-Saharan Africa (adopted 01/20/2019 from https://diningforwomen.org/sub-saharan-africa-and-the-sustainable-development-goals/)

Although globally, most young people generally do not receive the needed professional mental health care and treatment (Rocha, Graeff-Martins, Kieling & Rohde, 2015), the case of young people in sub-Saharan African countries is particularly troubling (Erskine et al., 2017; Fisher et al., 2011; Owen et al., 2016; Patel et al., 2008, 2015; Patton et al., 2016). In Ghana, for example, only 2.8% of the mentally ill are able to access treatment and professional care (Roberts, Mogan & Asare, 2014). Thus, the limited availability of professional mental health care providers and inaccessible formal care sources have partly made specialised drug outlets and pharmacies important sources of treatment for a wide range of health problems in sub-Saharan Africa (Goodman et al., 2007; Mwita et al., 2017; Wafula, Miriti & Goodman, 2012).

However, among other concerns, the dispensing of medicines by these drug outlets and pharmacies is generally characterised by concerns related to medicine

dispensers' unprofessional knowledge, wrong doses, and inappropriate drugs for complaint. Wafula et al. (2012, p.1) observed that, "a vast majority of shops simply sold whatever medicines clients requested, with little history taking and counselling [*and*] most shops also stocked popular medicines at the expense of policy recommended treatments". Although there are efforts to check the safety and quality of medicines in Africa (Diap et al., 2010; Strengthening Pharmaceutical Systems Program, 2011), the situation is further compounded by the sale and wide distribution of counterfeit and substandard medicines (e.g., anti-malarial medicines etc.), which have become a major public health challenge across the sub-region involving over 50% of the pharmaceutical markets in many African countries (Ambroise-Thomas, 2012; Banerjee, 2017; Karunamoorthi, 2014; Mhando et al., 2016).

Natural disasters, armed conflict and wars have also weakened further the already-weaker safety nets of young people in sub-Saharan African countries (African Union, 2017; Canning, Raja & Yazbeck, 2015; Patton et al., 2016; Song & Shaheen, 2013). It is therefore not uncommon to find within the sub-region young people orphaned by HIV/AIDS, displaced by armed conflicts and wars (including former child soldiers), homeless and living in street contexts or dwelling in slums within urban areas, living with extended family relations instead of parents (Beegle, Filmer, Stokes & Tiererova, 2010; Blum, 2007; Kabiru et al., 2011; Kinyanda et al., 2011; Patton et al., 2016; UN-HABITAT, 2010).

Finally, although young people in sub-Saharan Africa are growing up within a context characterised by numerous challenges, risks and high rates of unmet needs, data and research into the health and well-being of these young population are limited, with their mental health issues remaining the most under-researched; continuous awareness creation to prioritise research in this area among this young population is still on-going (Kabiru et al., 2011, 2013; Omigbodun & Belfer, 2016; Owen et al., 2016; Patton et al., 2016).

1.2.6.3. Ghana

As indicated earlier, the two primary studies of this thesis were conducted in Ghana. The population of the primary studies was adolescents: adolescents in second cycle schools and street-connected adolescents. Further relevant specific descriptive information are provided in the "method" sections of Chapter 3 and Chapter 4 of this thesis. Ghana is an Anglophone country located north of the Equator, on the west coast of sub-Saharan Africa (see Figure 1.2). It shares borders to the north, east, and west with Burkina Faso, Togo, and Côte d'Ivoire respectively. The Gulf of Guinea occupies the southern frontier of the country.

Ghana is largely heterogeneous in terms of language, ethnic, and religious groupings (Ghana Statistical Service, GSS, 2013a). There are about 81 languages in the country (Simons & Fennig, 2018). English is the lingua franca of Ghana and remains the language of instruction and assessments at all levels of education across the country. There are eight main ethnic groups in Ghana: Akan (47.5%), Mole Dagbani (16.6%), Ewe (13.9%), Ga-Dangme (7.4%), Gurma (5.7%), Guan (3.7), Grusi (2.5%), Mande (1.1%), and others (1.4%). Most Ghanaians (71.2%) identify as Christian, 17.6% Islam, 5.2% African traditional religion, and 5.3% without any religious affiliation (GSS, 2013a). Generally, Ghanaians mix well, as there is religious and ethnic tolerance shown through, for example, inter-ethnic marriages, and the 1992 Constitution of Ghana guarantees the freedoms of the people regardless of their ethnic or religious backgrounds.

According to the 2010 Population and Housing Census by the Ghana Statistical Service (GSS, 2013a), Ghana's population stood at 24,658,823, and has been projected to increase to 30,955,202 by the close of the year 2020 (GSS, 2019). About 22.4% of Ghana's population represent persons aged 10-19 years. In other words, a little less than a quarter of all persons in Ghana fall within this age bracket, with two in every five persons in the country being less than 15 years. Hence, Ghana's population has been generally described as youthful (GSS, 2013a, 2013b, 2013c). Ghana has a lower-middle-income status (The World Bank, 2018), and falls within the medium human development category (HDI = 0.592), ranked 140 out of 189 countries and territories (United Nations Development Programme, UNDP, 2018). In terms of the Sustainable Development Goals (SDG), the country has an index of 62.8, with a global raking of 101 out of 151 countries (Sustainable Development Solutions Network – SDSN, 2018).

1.2.6.3.1. Why Ghana?

The choice of Ghana as the research setting for the primary studies of this thesis was partly arbitrary and partly informed by four reasons. Firstly, besides South Africa (an upper-middle-income country), Uganda (a low-income country) and Zambia (a lower-middle-income country), Ghana (also a lower-middle-income country) has been found as a model sub-Saharan African country where positive working relationships between academic researchers and health ministry policy makers and a willingness on the part of health policy makers to engage with health researchers exist (Flisher et al., 2007).

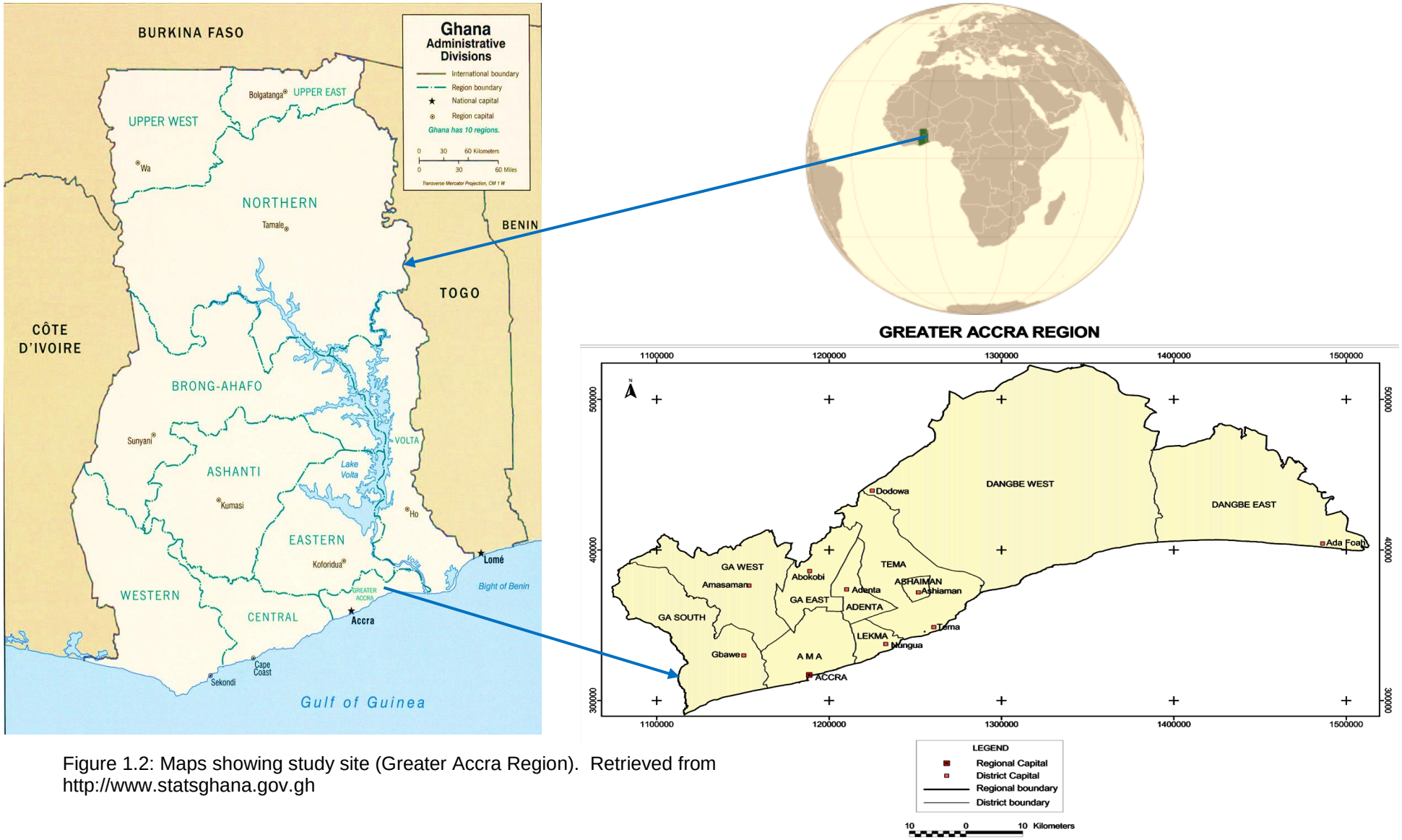

Figure 1.2: Maps showing study site (Greater Accra Region). Retrieved from http://www.statsghana.gov.gh

With this in mind, it was assumed that with Ghana as the setting of this study, chances are the conclusions and recommendations of this study would at least inform key stakeholders concerned with making child and adolescent (mental) health policies or would be considered by the relevant policy makers for possible implementation.

Next, Ghana remains one of the few countries in sub-Saharan Africa which has shown potential by hearkening to the global and regional call to scale up mental health services (Chistholm et al., 2007; Eaton et al., 2011). In this regard, Ghana has promulgated a mental health law (Act 846 of Ghana, 2012) to improve the provision of mental health services in the country and to provide a model for other countries within sub-Saharan Africa and low-and middle-income countries more generally (Doku, Wusu-Takyi & Awakame, 2012; Walker, 2015; Walker & Osei, 2017; Zhou et al., 2018). In Anglophone West Africa, “Ghana has the most advanced mental health legislation in the region” (Esan et al., 2014, p. 1085), even though there are still basic challenges with implementation, access and public attitudes (Badu, O’Brien & Mitchell, 2018; Gyamfi, Hegadoren & Park, 2018; Walker, 2015; Walker & Osei, 2017).

Pointedly, across sub-Saharan Africa, Ghana is held up as having a successful national health insurance scheme (NHIS), which other countries within the sub-region are learning from and adopting (Olugbenga, 2017). Legally, the NHIS covers every citizen in Ghana, plus exemption entitlements to some segments of the population (e.g., the homeless, pregnant women, the poor and other vulnerable groups) – even though 100% coverage of the scheme has not been achieved (Drake, 2018; Fenny, Yates & Thompson, 2018; Nsiah-Boateng & Aikins, 2018). Thus, the scheme prevents out-of-pocket payment for healthcare, thereby allowing the poor to access professional healthcare (Okoroh et al., 2018).

The third reason relates to the fact that, the primary researcher is a native of Ghana, resident in the country as a licensed Community Psychologist. Key reviews of mental healthcare and research in Ghana have shown that, besides the general lack of larger epidemiological studies on self-harm and other mental health issues in the country, often experts researching mental health in the country are from high-income countries, a situation which increases the risk of cultural bias in studies (Ofori-Atta & Ohene, 2014; Read & Doku, 2012). Even though being a local researcher does not rule out cultural bias entirely, comparatively, the primary researcher stands a better chance of deeper understanding and appreciation of the nuances of the broader cultural, historical, social, educational, religious, political, and health landscapes relevant to adolescent self-harm in Ghana.

Finally, in Ghana, attempted suicide – which is a form of self-harm – is highly stigmatised (Osafo, 2016), as the behaviour is morally tabooed (Osafo et al., 2011a; Sarpong, 2006), religiously considered as a sin (Akotia et al., 2014; Osafo et al., 2013), and legally criminalised (Hjelmeland et al., 2014; Kahn & Lester, 2013; Mishara & Weisstub, 2016). The Criminal Code of Ghana (Act 29, Section 57, sub-section 1) provides that, "a person who attempts to commit suicide commits a misdemeanour". Studies have shown that, indeed, persons found guilty of this law have been given hefty fines or in some instances jailed (e.g., Adinkrah, 2013), whereas in some cases – e.g., attempted suicide presented to hospitals – medical staff attending to the offenders fail to call in the police to effect arrest (Adomakoh, 1975), and where reported, some police officers either refer such offenders for mental health attention or fail to process the offenders for prosecution altogether (Osafo et al., 2017). Against this background, mental health professionals and researchers have recently begun to examine the attitudes and views of Ghanaians towards the decriminalisation (or keeping) of the law. Among other things, the ultimate goal of this thesis is to contribute to the evidence base informing the push for a repeal of the law which criminalises attempted suicide in the country.

To date, the available studies in this regard have examined the views of key stakeholders such as the police (Hjelmeland et al., 2014; Osafo et al., 2017), judges and lawyers (Osafo, Akotia, Andoh-Arthur, Boakye & Quarshie, 2018), medical doctors, psychologists, and other front-line clinical staff (Hjelmeland et al., 2014; Osafo, Akotia, Boakye & Dickon, 2018), university students (Knizek, Akotia & Hjelmeland, 2011; Osafo et al., 2011b), suicide attempt survivor families (Asare-Doku, Osafo & Akotia, 2017), and lay persons (Osafo et al., 2011a). Across these studies, the majority of the participants supported the call to repeal the law, although some police officers, nurses, lay persons, and university students advocated the keeping of the law for its deterrent function. However, so far, no studies have informed this debate with evidence on the views of children and young people (including out-of-school and street-connected youth) in the country. Therefore, this study adopts Ghana as its setting, partly, with the hope that it would draw on the children and young participants' discourse to inform the on-going criminalisation–decriminalisation debate in the country.

1.2.6.4. Greater Accra Region

1.2.6.4.1. Demographics

Ghana is divided into 10 administrative regions and 216 districts (GSS, 2013b)[3]. Accra is the national capital and doubles as the regional capital of the Greater Accra region and the seat of government. Greater Accra is smallest of the 10 regions of Ghana and it is in the south-central part of the country and shares borders with the Eastern Region to the north, Volta Region to the east, Central Region to the west, and the Gulf of Guinea to the south (see Figure 1.2). It is the smallest of the 10 administrative regions of the country, occupying an area of 3,245 square kilometres or 1.4% of the total land area of Ghana. In terms of political administration, greater Accra is divided into 10 districts with their capitals. According to the 2010 population and housing census (GSS, 2013b), the Greater Accra region ranks second (after the Ashanti region) as one of the most urbanised and densely populated regions of Ghana with a population size of 4,010,054 (Males = 48.3%, females = 51.7%), representing 15.4% of the national total population. Of this total population (i.e., 4,010,054), 30.7% are young people aged between 10 and 24 years, whereas persons aged 60 years and older constitute 5.5% – a clear indication of high rate of immigration into Greater Accra (GSS, 2013b). Akan (39.8%), Ga-Dangme (29.7%) and Ewe (18%) are the major ethnic groups in the region, but the Gas constitute the largest single sub-ethnic grouping (18.9). The Ga-Dangme, who are the main indigenous people of the region, are patriarchal, patrilineal and patrilocal. Consistent with the national distribution, 83.0% of the population of Greater Accra identify as Christian, followed by Muslims (10.2%), people who identify with no religious group (4.6%), and 1.4% are adherents of the African traditional religion (GSS, 2013b).

1.2.6.4.2. Health care

As indicated earlier, the Greater Accra region has the highest share of the health infrastructure and human resource, compared to the other nine regions of Ghana. The region has a public sector teaching hospital, a regional hospital, and ten district and sub-metropolitan hospitals. There are 31 health centres and 38 community health and planning services compounds, and four polyclinics, providing primary health care. Two of the three main psychiatric hospitals in the country are located in

[3] It is noted that six new regions have been created most recently through referenda held on December 27, 2018, bringing the total number of administrative regions in Ghana to 16.

the Greater Accra region. The region also has a larger share of private health facilities and a vibrant private sector offering healthcare services through hospitals, clinics, medical laboratories, and pharmacies (Amoakoh-Coleman et al., 2015; Wang, Otoo, & Dsane-Selby, 2017). Greater Accra ranks third (following the Ashanti and Brong-Ahafo regions in first and second places respectively) as having a wider coverage of the national health insurance scheme (National health insurance authority, 2013). Traditional and faith-based healers providing mental health care (e.g., pastors, “mallams”, herbalists, and shrine priests) are also available in the region (Asamoah et al., 2014; Kpobi & Swartz, 2018, 2019; Kpobi, Swartz, & Omenyo, 2019; Ofori-Atta et al., 2018).

1.2.6.4.3. Education

In Ghana, young people’s expected years of schooling is 12, with a mean of seven years (UNDP, 2018). Across the 10 regions of Ghana, there is a higher level of formal schooling in urban areas compared to rural settings, and literacy is higher among young males in all the regions than their female counterparts, as generally, girl-child education lags behind male education, in term of enrolment and completion rates (GSS, 2013a). Presently, Ghana runs a 3-progressive level system of education: basic education, second cycle education, and tertiary education (Act 778; Adu-Gyamfi, Donkoh & Addo, 2016). The basic level of education consists of two years of kindergarten education (from age 4 to 6), six years of primary education (from age 6 to 12 years), and three years of junior high school education (targeting 12 to 14-year olds). Education at the basic level is free and compulsory (although there are reports that students are required to pay some levies [Akaguri, 2014]). However, to progress from the basic educational level to second cycle educational level, pupils must write and pass a junior high school-leaving common examination, the Basic Education Certificate Examination (BECE), administered and supervised nationally by the West African Examinations Council (WAEC).

The placement of students into second cycle schools following the publication of BECE results is done through a centralised, merit-based computerised school selection and placement system (CSSPS). Prior to writing the BECE, students are required to submit to the CSSPS their ranked choices of second cycle schools and programmes of interest, by following some protocols. Upon the release of the BECE results, qualified students are assigned based on merit to the first available school on their chosen list of schools. In practice, however, due to infrastructural challenges faced by some schools, many schools admit students based on their infrastructural capacity. By default, students who do

not obtain admission to any of their chosen schools are allocated to a school with less subscription and has available spaces. Efforts are made to place students in their chosen district or region wherever possible, but often this not considered (Ajayi, 2012).

The second cycle level of education (mainly for persons aged 15-17 years) is made up of four years of senior high education, technical, vocational, business and agricultural education, or appropriate apprenticeship training of not less than one year (Act 778). The four-year second cycle education has been revised to three years since 2009. It worth mentioning that there are over 9,000 junior high schools across the 10 regions of Ghana, compared to about 1,491 senior high schools in the country. This considerable variation between the two levels of education implies that many young people are unable to access second cycle education mainly due to lack of space to accommodate them (Ajayi, 2012; Akyeampong, 2010; Ananga, 2011a, 2011b; Government of Ghana, 2004). Some of these young people who are unable to access second cycle education drop out of school completely, with no prospect of returning to school. They usually learn a trade/vocation, enter the world of work, or emigrate to bigger cities and towns in search of work; others desert schooling temporarily for a few years, even though returning to school is not always guaranteed (Ananga, 2011a, 2011b). Often, some of the junior high school leavers (particularly, in rural communities) who migrate to bigger towns and cities in search of work end up living on the streets (Hashim, 2007; Hashim & Thorsen, 2011). Recently, as a short-term measure to address this infrastructural challenge, government has introduced a double track system, and a semester system at the second cycle educational level, during the new academic year 2018/2019. Although, this strategy has made the way for many more junior high school leavers to access second cycle education, the country is yet to witness any results, in terms of completion rates, quality, performance, and sustainability.

Generally, there are some variations in the characteristics of second cycle schools in Ghana. These variations are related to geographical location (rural, peri-urban or urban), academic performance, gender composition (mixed/co-educational or single-sex), academic facilities, and the general prestige of the schools. Typically, senior high schools (grammar schools) in Ghana are ranked A, B, and C categories. Category A schools score higher on prestige and academic performance. They have good academic facilities, and some have expansive infrastructure, compared to schools in categories B and C. Across the country, schools in category A are few and are often located in the rich cities (e.g., Accra, Kumasi, Cape Coast etc.), towns, and wealthy districts. Category A schools tend to

attract students from similarly high grade junior high schools in the country – thus yearly, the competition for entry into category A schools remains keen. Schools in category B can be described as average performing schools, with modest infrastructure, and student population. However, schools in category C perform slightly below average and are less endowed in terms of infrastructure. The majority of senior high school students in Ghana are in category C schools. To extend the level playing field, the government of Ghana has introduced a policy that seeks to ensure that 30% admission spots in every category A school are reserved for students from deprived public junior high schools across the country (Dery, 2017). Thus, due to the centralised, computerised school selection and placement system used in placing students into second cycle schools, every academic year second cycle schools tend to receive young people of diverse socio-economic, religious, ethnic backgrounds, and geographical locations within Ghana. For example, a model senior high school in Accra (with a hostel or boarding facility[4]) typically has a fair regional mix of students who hail from various parts of Ghana, including various districts, municipalities, and metropolis within the Greater Accra region (GES, 2015a, 2015b).

Tertiary education is provided by universities, polytechnics, and colleges of education established by an Act of Parliament or accredited by Ghana's National Accreditation Board. To progress to the tertiary educational level, students must pass the West African Senior School Certificate Examination (WASSCE), also supervised by WAEC (even though some tertiary institutions in Ghana admit students with some international baccalaureate qualification like "A level").

The Ghana Education Service (GES) is "responsible for the implementation of pre-tertiary educational policies of the Government to ensure that all Ghanaian children of school-going age irrespective of tribe, gender, disability, religious and political affiliations are provided with good quality formal education" (GES, 2018). In Ghana, there are more public, state-funded second cycle schools than those privately owned. As at the beginning of the year 2016, when this study was designed, there were 826 second cycle schools across the country. Of these, 603 (73.0%) were public second cycle schools, relative to 223 (237.0%) private schools. Similarly, Armah (2017) observes that even though private schools can report very

[4] Where a child is placed in a school where there is no hostel or boarding facility but a relative lives within the vicinity or community of the school, the child is sent to live with the relative to enable the child attend school (Nukunya, 2016).

high scores on school-leaving examinations and school-leaver entry to tertiary educational institutions, relatively, the private school sector has a small size. For example, in the 2014/2015 academic year, only 25% of all Ghanaian primary pupils attended private basic schools. At the second cycle level, just a little over 8.0% attended private senior high schools, with the majority (92%) enrolling in government second cycle schools. It is worthy of note that public second cycle education was heavily subsidised by government (Akaguri, 2014; Darvas & Balwanz, 2014), until September 2017 when it was made entirely free. Naturally, therefore, enrolment in public second cycle school is expected to be higher, compared to private schools, where (higher) fees are charged.

Schools represent a key environment which influences the health behaviours of children and young people across a wide range of outcomes, including self-harm. More pointedly, according to Shaffer and Gould (2000), acts of intentional self-harm and thoughts of suicide are common during the school years. Thus, the school serves as a natural venue for the assessment of (mental) health problems and promotion of pro-health behaviours in young people, and the implementation of health intervention programmes (Aldridge & McChesney, 2018; De Riggi et al., 2017; Evans & Hurrell, 2016; Groschwitz et al., 2017; Leschield, Saklofske & Flett, 2018).

1.2.6.4.4. Why the Greater Accra region?

The primary studies of this thesis were conducted in the Greater Accra region of Ghana. The choice of this region was informed by three reasons. First, Greater Accra consistently continues to receive the highest number of migrant populations from the nine other regions of the country, and as such has been described as the “the most migrant-attraction region in Ghana” (GSS, 2013c, p.14). The region has 9.7% of its total population being 14-19 years old and has the highest proportion (11.4%) of persons aged 20-24 years. Thus, Greater Accra has been identified as the most diverse and, characteristically, the closest representation of the entire population of Ghana (Boateng & Lee, 2014; GSS, 2013c).

Secondly, there is evidence to suggest that self-harm and suicidal behaviours are more common in urban than in rural Ghana (Adinkrah, 2011b). A situational analysis of adolescent suicidal behaviours in Ghana suggests that, suicidal behaviours are a reality among young people in schools in the Greater Accra region (Quarshie, et al., 2015). Recently, reports from the Ghana Police Service indicate that the region has the highest proportion of all cases of attempted

suicide (21.7%), relative to the other nine regions of the country (Ghana Police Service, 2017).

The third reason for choosing the Greater Accra region as the setting for the primary studies of this thesis is related to the child welfare concerns and the recent calls by various key stakeholders (including government, researchers, and international organisations such as UNICEF) for further research evidence towards the strengthening of the region's child protection capacity and structures. Recent government and international reports (e.g., Better Care Network & UNICEF, 2015; GSS, 2012, 2013c, 2014; MoGCSP & UNICEF 2014; UNFPA & UNICEF, 2018; UNICEF, 2014, 2017) have identified several child-protection concerns in the Greater Accra region (including but not limited to): violence, sexual abuse and exploitation, child marriage, child labour and trafficking, and street-connected children and youth phenomenon.

Street-connected Children and Youth: The phenomenon of living and working on the street by young people remains a key child-protection challenge in the Greater Accra region, and generally across the major cities in Ghana. This thesis mainly involves two groups of adolescents within the Greater Accra region: adolescents in school, and street-connected adolescents. Thus, a detailed discussion of this phenomenon of street-connected young people is provided below, partly to establish the context of this sub-group of participants for this thesis.

1.2.6.4.5. Terminology and definition of street-connected children and youth

Street-connected children and youth remain an undeniable part of the urban scene and cities of some high-income countries and many low and-middle income countries (Aptekar & Stoeklin, 2014; Embleton et al., 2016; Ennew & Swart-Krger, 2003). However, there is no universally accepted single definition and categorisation of this group of young people. For instance, in the 1980s, the term "street children" was introduced and used to refer to,

> […] any girl or boy [...] for whom the street (in the broadest sense of the word, including unoccupied dwellings, wasteland, etc.) has become his or her habitual abode and/or source of livelihood, and who is inadequately protected, supervised or directed by responsible adults (ICCB, 1985, cited in Lusk, 1992, p. 294).

However, the term “street children” has been found to be problematic, as it connotes a pejorative and a stigmatising label (Office of the United Nations High Commissioner for Human Rights – OHCHR, 2012). Such labelling leads to further marginalisation and demonisation of these young people – they are viewed as a threat, a source of criminal behaviour, and a problem to society, instead of being viewed as young people who need help from society (Corsaro, 2011; De Moura, 2002; Le Roux & Smith, 1998; Orme & Seipel, 2007; UNICEF, 2006). Well documented evidence suggests that such negative perceptions have been linked to the abuse of this young population by the general public, police brutalities and sometimes killing in execution style of these young people in some parts of the world (De Moura, 2002; Dewees & Klees, 1995; Lalor, 1999; Le Roux & Smith, 1998; Serra, 2000). As part of efforts to undo these negative public perceptions, evolving terminologies such as “children in street situations”, “children working and/or living on the street”, children with street connections, “street-involved children and youth”, “street-connected children and young people”, and “street-connected children and youth”[5], have recently been introduced, preferred and used to mean children and other young people for whom the street is a pivotal reference point, one which plays a vital role in self-identity and in their life on a daily basis (Coren et al., 2013; Coren, Hossain, Pardo & Bakker, 2016; De Moura, 2002; Embleton et al., 2016; OHCHR, 2012; Seidel et al., 2017; Turgut, 2015).

In 1986, based on research evidence from Latin America, UNICEF (1986, pp.9 – 10) introduced three categories of street-connected children and youth: 1) "candidates for the street" – children working on the streets but living with their families; 2) "children on the street" – children in this group had some family support, but such support was inadequate and/or sporadic; and 3) "children of the street:" – this group of children had a distressing sense of neglect and abandonment. Functionally, these were children without any family support, they had been sent away or pushed out of the home by their families that could no longer support them, hence they lived completely on their own. Studies in the 1990s and 2000s have contested that, in practice, these young people do not constitute a homogenous group and cannot be neatly categorised; significant diversities exit among these

[5] In the present study, the terms, “street-connected children and youth”, and “street-connected children and young people” are preferred and used interchangeably with “street-connected children and adolescents”, as it includes young people aged 18 years but not above 25 years old. “Children” is often used in reference to persons below 18 years old.

young people even within the same continent, sub-region, and even in the same country (Ennew, 2003; OHCHR, 2012).

1.2.6.4.6. Estimates and causes of street-connected children and youth

Estimating the exact number of street-connected children and youth around the world or anywhere in the world is impossible, although globally the figure is suspected to be in millions (UNICEF, 2006). This is largely because, “the number and flow of children onto the streets of a given city or country may fluctuate significantly according to changes in socioeconomic and cultural-political contexts, availability of protection services and patterns of urbanization” (OHCHR, 2012, p.10).

In a recent systematic review and meta-analysis of the literature on the “causes of child and youth homelessness in developed and developing countries”, Embleton et al. (2016) identified six categories of reasons for which young people take to street-living: poverty, abuse, family conflict, delinquency, psychosocial health, and other reasons (such as desire to go to the city, desire for independence etc.). These were drawn from the inclusion of 49 eligible studies, involving 13,559 participants from 24 countries (of which 11 were sub-Saharan African countries). The results showed that, globally, the most commonly reported reason for street-connect living was poverty, followed by family conflict, abuse, other reasons, psychosocial health, and delinquency.

Embleton (et al., 2016) described “Poverty” broadly as consisting of poverty, hunger, work to get money, housing instability, rural-urban migration, structural, and refugee, conflict, or war displacement. Physical abuse, sexual abuse, and maltreatment and neglect constituted the “abuse” reason. Escaping home problems, conflict in family, abandonment, family issues, domestic violence, being orphaned, substance use at home, alcoholism at home, being thrown out, mutual decision with parents, and being brought to the streets by family/relative were grouped under the reason “family conflict”. “Delinquency” consisted of the following variables: delinquency, conflict with the law, and removed by authorities. Sexuality or gender issues, mental health, anxiety or depression, conflict with friends, traumatic events, personal drug and alcohol use, pregnancy, and peer pressure made up the reason “psychosocial health”.

The analysis further showed that, in Africa, Asia, Eurasia, and South and Central America, poverty-related reasons were the most commonly reported, whereas in North America and the Pacific region, family conflict was the commonly reported reason. Furthermore, it was observed that female street-connected children and youth in developed regions more frequently reported abuse-related

reasons than male street-connected children and youth. However, the analysis showed no statistically significant difference between female and male street-connected children and youth in developing countries, in terms of abuse as a primary reason street living (Embleton et al., 2016).

Additionally, HIV/AIDS, and harmful practices such as early and forced marriages, and natural disasters have also been found as other pathways to street living by children and young people (OHCHR, 2012). Notably, every street-connected child or young person has a unique story of how they experienced these factors which “pushed” or “pulled” them onto the street, an experience which can happen repeatedly and differently in leading to the development of connections with the street (OHCHR, 2012).

1.2.6.4.7. Health and well-being of street-connected children and youth

This sub-section summarises the key evidence on the health and well-being of street-connected children and youth. Mainly, it draws on findings from recent systematic reviews and meta-analyses in the area (e.g., Bassuk, Richard & Tsertsvadze, 2015; Cronley & Evans, 2017; Embleton et al., 2013; Heerde et al., 2015; Hodgson et al., 2013; Medlow, Klineberg & Steinbeck, 2014; Woan et al., 2013). The streets have been described as a mixed terrain – they are the domain of social encounters and politics-based demonstrations, terrains of oppression and resistance, places of pressure, pleasure, and uncertainty (Ennew, 2003; Fyfe, 2006; Malone, 2002).The everyday life trajectory of street-connected children and young people can be described as awful and precarious, as they engage in work activities considered to be hazardous to their health and development, lack formal education, lack proper shelter and consequently are vulnerable to diseases and mental health problems (e.g., Hodgson et al., 2013).

First of all, it is instructive to indicate that dealing with the negative perceptions (e.g., delinquents, truants etc.) held by the wider society within which they find themselves and the associated treatment meted out to them (e.g., exploitation, abuses, violations of their basic human rights etc.) often represents the most complex challenge that street-connected children and youth face (Kidd, 2007; Le Roux, & Smith, 1998; OHCHR, 2012; Panter-Brick, 2002; UNICEF, 2006). Cronley and Evans (2017) found that, to manage and cope with this major daily challenge, street-connected children and youth develop a strong sense of resilience by building and relying on informal social networks, spirituality, and their creativity.

However, globally, relative to children and young people in school and with their families in stable housing, street-connected children and youth are at a higher risk of mental health problems – e.g., post-traumatic stress disorder, self-harm,

mood disorders, anxiety, alcohol and drug dependence, and other substance abuse disorders (Bassuk et al., 2015; Embleton et al., 2013; Hodgson et al., 2013; Medlow et al., 2014). Furthermore, street-connected children and youth are at a relatively higher risk of sexual victimisation, sexually transmitted diseases (e.g., HIV/AIDS) and sexual risk behaviours (Heerde et al., 2015; Medlow et al., 2014; Woan et al., 2013). Thus, the relatively higher risk of both physical and mental health challenges faced by this young population, plus the general adverse realities of homelessness they experience elevate the risk of (early) death in street-connected children and youth than other young people without street connections (Embleton et al., 2018; Morrison, 2009; Nilsson et al., 2018).

1.2.6.4.8. Street-connected children and youth in Accra

According to the Ghana Statistical Service (GSS, 2013c), in urban Ghana, about three percent of young persons belong to no specific households within a housing facility or have no decent living arrangement; they spend the night in the open. Therefore, “it is not uncommon to find some young persons who live their lives entirely on the street in some of the cities and large towns in the country” (GSS, 2013c, p.11). Even though existing evidence suggests that street-connected children and youth can be found in all the major cities – for example, Accra, Kumasi, Takoradi, and Tamale – there is no official nationwide estimates of these young people (see Amoah et al., 2017; Hatløy & Huser, 2005; Nieminen, 2010; Wutoh et al., 2006). Latest available regional official headcounts have been conducted in two major cities in Ghana: Accra, in the Greater Accra region (Department of Social Welfare [DSW], Ricerca e Cooperazione, Catholic Action for Street Children [CAS], and Street Girls Aid, 2011), and Kumasi, in the Ashanti region (Streetinvest, 2013). Consistent with the global disagreements regarding the definition and categorisation of street-connected children and young people, these two censuses in Ghana report similar estimates, but different categories.

In Kumasi, StreetInvest (2013) counted 7,831 street-connected children and young people (females = 69.66%; males = 30.34%) aged not more than 18 years, of which 8.29% live permanently on the street of central Kumasi. The report provides no definition of “street-connected boys and girls” guiding the census, but based on the street-connected activities these young people were involved in, the census placed them into seven categories: 1) fixed business (13.48%) – doing business that is rooted in a location; e.g. selling basic consumer items or working in a fixed retail premises; 2) moveable business (24.70%) – selling of small goods like ice water or other perishable or non-perishable items, and moving from one place to another; 3) casual workers (31.45%) – any form of manual work that does not

involve selling of goods (e.g., "kayayei"[6] or headload porters [girls], and shoe-shiners [boys]); 4) jobless (28.17%) – a street-connected child or youth who is not engaged in any kind of income generating activity at the time of the headcount; 5) beggars (0.52%) – any child or youth asking for food or money as a means of survival; 6) commercial sex workers (1.16%) – a girl either involved in conversation or advertising herself with a view to engage in transactional sex - generally observed at night in specific locations; and 7) pregnant girls (0.51%) – girls who, at the time of the census, were living on the street because they were pregnant.

In the Greater Accra region, DSW et al. (2011) used the term "street children" and defined a "street child" as "one who is under 18 years, is born on the street and lives with parent(s) on the street; migrated to the street; or is an urban poor child or street mother who survives working in the street" (DSW et al., 2011, p.11). The headcount identified 61,482 street-connected children and young people aged between less than age one and 18 years; some were older than 18 years. The majority (57%) were within the 11-18 age band. It is worth mentioning that, a preceding survey of street-connected children and young people conducted in Accra (Hatløy & Huser, 2005) identified 1,341, made up of more girls (75%) than boys (25%), with the majority aged between 14 and 17 years. Consistent with this earlier finding, DSW et al. (2011) also counted more girls (57%) than boys (43%). This trend has been attributed to the cultural practice where young girls preparing to get married in the northern regions of Ghana come temporarily to the south, particularly, Accra and Kumasi, to work (mainly as "kayayei" in commercial areas) in order to raise money to finance their bride wealth to bring into marriage (Agarwal et al., 1997; Awumbila & Ardayfio-Schandorf, 2008; Better Care Network & UNICEF, 2015; DSW et al., 2011; StreetInvest, 2013; Hatløy & Huser, 2005).

DSW et al. (2011, p. 10) classified "street children" in Accra into four categories based on family connection, place of origin, and motherhood as follows: 1) children born on the street (15.1%) – children born on the street and living with their mothers or families"; 2) migrant children (76.9%) – children who have left their homes (in most cases, independently), mainly from rural and peri-urban areas of

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[6] "Kayayei" is the plural of "kayayoo", a term used by the Ga people, the indigenous ethnic group in the Greater Accra region of Ghana, to refer to women or girls who engage in carrying goods for a fee. Etymologically, the term, kayayoo, is derived from two words, one from Hausa and one from the Ga language: "kaya" in Hausa means wares or goods, whilst "yoo" in the Ga language means woman or girl – the plural of "yoo" is "yei" in the Ga language (Agarwal et al., 1997). Usually, kayayei use large basins to carry goods and loads for shoppers, shopkeepers, and traders for a fee.

Ghana to city centres, and are living and working in the street; they are no under adult control but are living with other children on the street; 3) urban poor (18%) – children who work on the street to augment family income or fend for themselves; they usually go back home after the day's work; some of them attend school but go to the street to earn money for their education; and 4) street mother (0.08%) – any girl under the age of 18 who is living on the street and having a child or children. Additionally, it was evident in the headcount that, 41.6% of the "street children" identified had dropped out of school; while 58.4% had never attended school. Drug and alcohol use was reported by 6.8% and 3.6% respectively.

1.2.6.4.8.1. Survival strategies of street-connected children and youth in Accra

Several studies have explored the livelihood and surviving strategies employed by street-connected children and youth in Accra (e.g. (Amantana, 2012; Awumbila & Ardayfio-Schandorf, 2008; Boakye-Boaten, 2008; DSW et al., 2011; Hatløy & Huser, 2005; Orme & Seipel, 2007; Quarshie, 2011). In Accra, street-connected children and youth are usually found in market places and lorry stations; the two main places where they sleep and work. The lack of decent accommodation is a major challenge this young population face in Accra – many sleep in groups within open spaces (including waiting areas of bus and train stations). Sleeping in groups within open spaces, particularly by girls, serves as a strong defence against theft and rape. Others contribute money to rent wooden shacks within markets and around lorry stations where they sleep as a group (Awumbila & Ardayfio-Schandorf, 2008).

Evidence also shows that exploitation is a reality among the street-connected children and young people themselves. Older street-involved children and youth often bully younger ones; those who are physically stronger bully the weaker ones, while those who have been on the street for a longer time bully the newcomers. Again, there is a "survival of fittest" situation where stronger (and older) ones extort money and take valued items from the weaker ones (and newcomers) and rent out street-space to those who are weak (Amantana, 2012).

Generally, street-connected children and young people form various social support networks among themselves in order to cope with and prevent many of these challenges. The boys form gangs as a protective mechanism, whereas some girls have reported forming semi-permanent conjugal relationships and sexual partnerships with other street-involved boys for protection and (financial) support. Apart from this practice leading to a sense of powerlessness on the part of the girls,

the transactional sexual activities involved lead to unplanned pregnancies, unsafe abortions, and “street babies”. The evidence also suggests that there is a sense of community solidarity among groups of street-connected children and young people. For instance, if one of them is ill, the rest of the group members contribute money to take care of the medical bill, or the contribution is used to arrange transportation to send the ill member back to the family in the home region (Amantana, 2012; Awumbila & Ardayfio-Schandorf, 2008).

In Accra (and across other major cities in Ghana generally), street-connected children and youth do not beg or scrounge from the public, even though occasionally some beg, when money or food is extremely hard to come by (Amantana, 2012; Mizen, 2018; Quarshie, 2011). Generally, they have gendered livelihood strategies. The boys engage mainly in shoe shining, garbage collection, car washing, truck pushing[7], and street vending. Some street-connected boys have reported stealing or begging to make ends meet (Hatløy & Huser, 2005). The girls work mainly as food and water sachets sellers, kayayei, errand girls, dish washing girls, and in some instances engage in prostitution (Agarwal et al., 1997; Awumbila & Ardayfio-Schandorf, 2008; DSW et al., 2011; Hatløy & Huser, 2005; Mizen, 2018; Orme & Seipel, 2007).

1.2.6.4.8.2. Public attitudes towards street-connected children and youth in Accra

Generally, as reported from other places around the world, street-connected children and adolescents in Ghana also face negative public attitudes and reactions. However, compared to cities in other parts of Africa (e.g., Nigeria, South Africa, Ethiopia, Uganda) and South America (e.g., Brazil, Guatemala), it is well documented that the greater majority of street-connected children and adolescents in Accra enjoy the goodwill and benevolence of the public (e.g., Awumbila & Ardayfio-Schandorf, 2008; DSW et al., 2011; Hatløy & Huser, 2005; Orme & Seipel, 2007; Quarshie, 2011). The evidence shows, for example, that city guards and the police within locations of street-connected children and youth in Accra often check on these young people to ensure their safety (Awumbila & Ardayfio-Schandorf, 2008). Periodically, government organises free registration exercises to enrol street-connected children and young people onto the national health insurance

[7] Truck pushing or truck pushers. Unlike “kayayei”, truck pushers are men and boys who use a flat-bed four-tyre wooden trolley, a 2-tyre metal trolley, or a metal or wooden wheelbarrow to carry loads and goods for shoppers, shopkeepers, and traders for a fee.

scheme to enable them to access free professional healthcare (Boateng, Amoako, Poku, Baabereyir & Gyasi, 2017; Frempon-Ntiamoah, 2015). Orme and Seipel (2007, p. 498) observe thus, “one reason street children in Ghana are still displaying behaviors that are consistent with societal norms and values is that they are not stigmatized and harassed by the community, to a large extent”.

Significantly enough, there are various NGOs, charities and other not-for-profit social organisations in Accra that are concerned with the welfare of street-connected children and young people (e.g., CAS, Chance for Children, Street Academy, Street Girls Aid, Street Children Empowerment Foundation, etc.). These organisations do not only provide free drop-in social and educational events, meals, and recreational space for these young people, but more importantly (through the employed services of trained social workers, and in some case psychologists) organise ‘street-child outreach programmes’, ‘street baby care’ programmes, and provide temporary shelter and short-term vocational skills training for street-connected children and youth. Also, the evidence suggests that some street-connected children and youth in Accra seek help for their medical and mental health needs from these charity organisations, even though others go to public hospitals, self-medicate, or do nothing about their ill health (DSW et al., 2011).

However, evidence also suggests that most street-connected children and youth in Accra sparingly use these available public social services and community resources, even where they are aware of the availability and have access. Generally, most of these young people do not trust these organisations’ ability to provide for their needs, with some street-involved young people reporting that some of these organisations are too regimented and often ask too many questions (Orme & Seipel, 2007).

To date, the primary researcher is not aware of any published study from sub-Saharan Africa on self-harm in adolescents which simultaneously includes both adolescents in school and street-connected children and young people. The present study seeks to strengthen its external validity by including both in-school and street-connected groups of young people. More importantly, street-connected children and adolescents represent a good case example of a relatively high-risk group whose self-harm behaviours have received inadequate attention in the recent research literature (Asante & Meyer-Weitz, 2017; Gauvin et al., 2019; Kidd, 2003, 2004; Swahn et al., 2012; Yoder, 1999).

1.2.7. Thesis Aims and Objectives

As discussed earlier, the definition and classification of self-harm is characterised by continuous debates in the literature. However, the need for evidence-based information related to the prevalence and factors associated with self-harm has been widely underscored (e.g., Muehlenkamp et al., 2012; Swannell et al., 2014; Zubrick et al., 2016), with a call for research from contexts where self-harm among adolescents remains largely under-researched, including in low- and middle-income countries (Aggarwal & Berk, 2015; Aggarwal et al., 2017). Therefore, broadly, the aim of this thesis is to establish an empirical understanding regarding the prevalence estimates, and the psychosocial context of self-harm in adolescents in Ghana, through the study of two populations in the Greater Accra region: in-school adolescents and street-connected adolescents. Three main specific objectives guide this study:

i. Examine what is known in terms of prevalence estimates, common correlates or risks and protective factors of self-harm in adolescents in countries across sub-Saharan Africa (Chapter 2).

ii. Describe the prevalence estimates and some of the common socio-demographic factors and negative events associated with self-harm among in-school and street-connected adolescents in Ghana (Chapter 3).

iii. Explore the lived experiences of self-harm in adolescents, and the views of key stakeholders regarding the phenomenon in Ghana (Chapter 4).

1.2.8. General Methodological Considerations

This thesis sets out to conduct a systematic review of the literature (available and accessible) on self-harm in adolescents in sub-Saharan Africa to inform two primary study components conducted in the Greater Accra region of Ghana: a quantitative cross-sectional survey and a qualitative interview study. Thus, a mixed methods approach – “two datasets (one quantitative and one qualitative), two types of analyses (statistical and thematic), and some way of combining or mixing what is learned from the quantitative and qualitative components of the study” (Plano Clark & Creswell, 2015, p.383) – was deemed appropriate for the primary studies of this thesis. A mixed methods research design affords the advantage of combining the strengths of both quantitative and qualitative designs in research (Creswell, 2014; Creswell, Plano Clark, Gutmann & Hanson, 2003; Plano Clark & Badiee, 2010).

Between five and 16 different reasons have been identified in the literature as informing the application of mixed methods in research (Bryman, 2006; Greene,

Caracelli & Graham, 1989). The rationale for choosing a mixed methods approach for this thesis was in two parts. Firstly, the primary research started with a quantitative survey; the inclusion of a qualitative component was to provide evidence to elaborate the relationships among the variables identified in the quantitative survey and to provide a broader socio-contextual understanding of self-harm behaviours among the adolescents studied. Secondly, the adoption of a mixed methods approach for this study is rationalised in terms of sampling (Bryman, 2006; Onwuegbuzie & Collins, 2007; Teddlie & Yu, 2007). In this thesis, regarding sequence, a quantitative survey was initially conducted partly to help identify adolescents with histories of self-harm to be recruited for one-to-one interviews in the second study, qualitative interview research. The sampling of adolescent participants for the qualitative study was facilitated entirely by the quantitative survey, which was the first in the sequence of the two primary studies conducted. Thus, specifically, the explanatory sequential mixed methods approach (Ivankova, Creswell & Stick, 2006; Leech & Onwuegbuzie, 2009; Plano Clark & Badiee, 2010) was used for the primary studies in this thesis. Figure 1.3 is a graphical representation of the sequential mixed methods procedure used; it shows the sequence and path followed for the two primary studies.

Any mixed methods research design has to meet three basic criteria: priority, implementation, and integration (Creswell, 2014; Creswell et al., 2003; Creswell, Fetters & Ivankova, 2004). The priority criterion relates to the weight or attention that is given to the qualitative component, relative to the quantitative component, or vice versa. There can be equal priority, qualitative priority, or quantitative priority (Creswell, 2014; Creswell et al., 2004; Schoonenboom & Johnson, 2017). In this thesis, equal priority was given to both the qualitative and quantitative components, due to the scope and goal of the thesis and the relatively elaborate nature of each study component. The quantitative component obtained and analysed data from anonymous questionnaire survey, involving a regionally representative sample of adolescents (n = 2,107). It used statistics to describe the prevalence estimates, and some of the common socio-demographic factors and negative events associated with self-harm in adolescents in the Greater Accra region of Ghana. The goal of the qualitative study was to sample some adolescent participants (n = 36) who reported histories of self-harm in the anonymous questionnaire survey for one-to-one interviews, exploring their lived experiences in terms of self-harm. It also conducted key stakeholder interviews (n = 11) to broaden the understanding of the general contextual factors related to adolescent self-harm in Ghana.

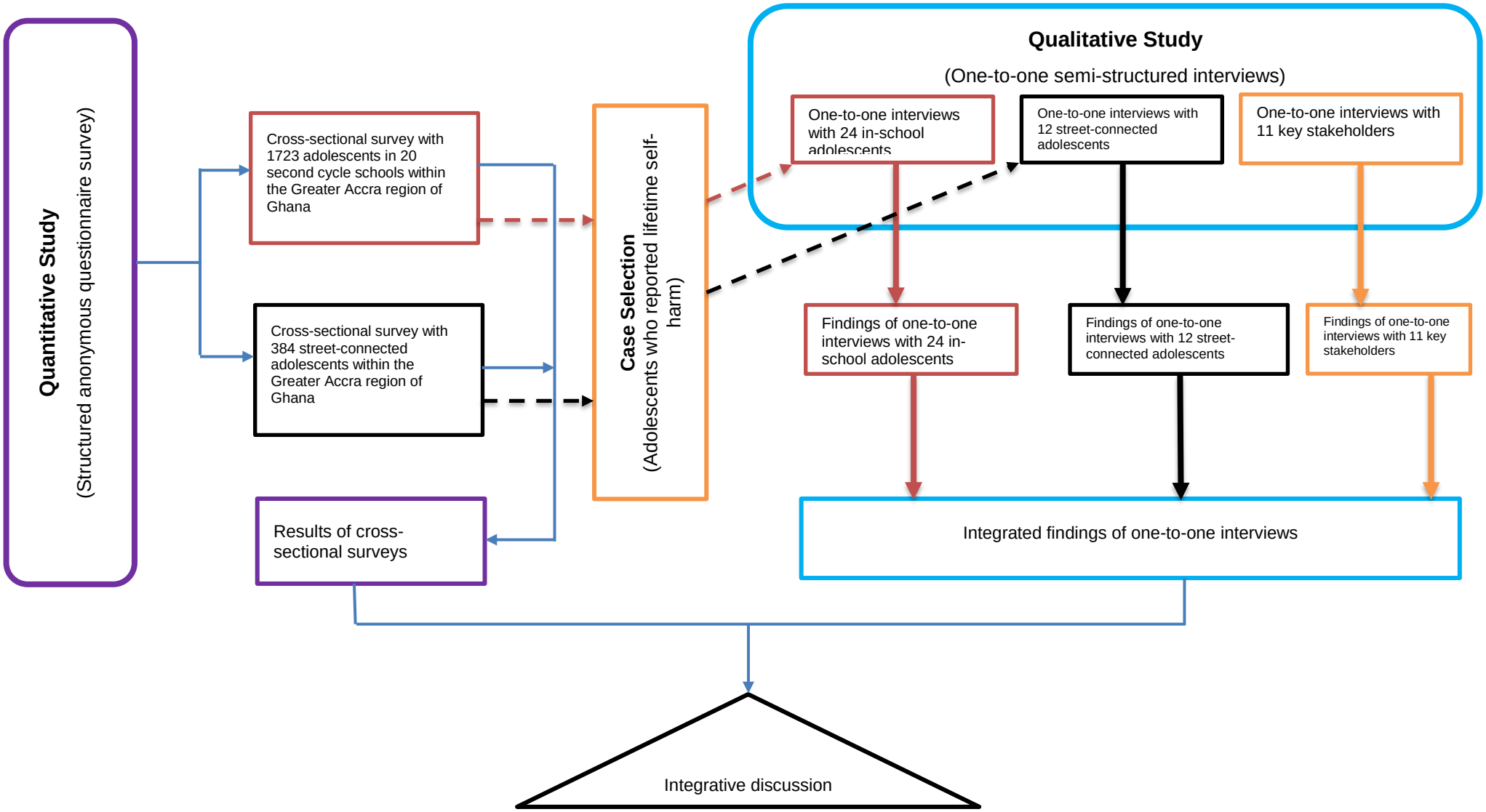

Figure 1.3: Explanatory Sequential Mixed Methods Design Used

The implementation criterion addresses issues related to the order or sequence in which each of the two studies is conducted, whether concurrent or sequential (Creswell, 2014; Creswell et al., 2004; Onwuegbuzie, & Collins, 2007; Teddlie, & Yu, 2007). The sequential implementation approach was used for the present study. Stated differently, data collection was done in two consecutive stages. The quantitative anonymous questionnaire survey and a preliminary statistical analysis of the survey data were conducted first. Next, the results of the preliminary statistical analysis[8] and the evidence obtained from the systematic review of the literature from sub-Saharan Africa (Chapter 2) were then used to formulate the research questions and design the interview protocol for the qualitative study, which was the second study in the implementation process. Chapter 3 of this thesis provides detailed discussion of the first study in the sequence (i.e., quantitative anonymous questionnaire survey with adolescents), while Chapter 4 presents the report of the second study in the sequence (qualitative interview study).

The final criterion, integration, has to do with the mixing or integration of the evidence from the two studies, quantitative and qualitative studies, and how this is done (Creswell et al., 2003; Tashakkori & Teddlie, 2010). Typically, this can be done by formulating both quantitative and qualitative research questions (at the beginning stage when the study is being designed), or while interpreting the findings of the qualitative and quantitative studies (Creswell, 2014; Teddlie & Tashakkori, 2003; Onwuegbuzie & Teddlie, 2003). For explanatory sequential mixed methods, the criterion of integration is also met by selecting cases from the quantitative study for the qualitative study and ensuring that the qualitative research protocol is informed by the results of the quantitative study (Creswell, 2014; Ivankova et al., 2006). In the present study, besides formulating the qualitative research protocol and selecting participants based on the results of the quantitative study, findings of both the quantitative survey and the qualitative interviews were integrated during the discussion of the key findings of this thesis (Figure 1.3). Chapter 5 of this thesis provides a discussion of the results of this project by integrating the key findings of the quantitative and qualitative components of this study to draw conclusions.

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[8] This project is a PhD research and as such the primary researcher had limited time within which to complete and submit the thesis for examination. Hence, the preliminary, not complete or exhaustive, statistical results were relied on at this stage of the study to inform the formulation of the research questions to be addressed by the qualitative study in the second stage of the implementation of the study.

As evident in the systematic review in this thesis (Chapter 2), predominantly, quantitative research designs with focus on estimating prevalence and identifying correlates or risk and protective factors of self-harm in adolescents have been used extensively, whereas qualitative, and mixed methods research designs exploring the experiences, meaning, and processes related to self-harm in young people have received little attention in sub-Saharan Africa.

Also, the systematic review (Chapter 2) revealed that many of the correlate or risk factor studies could have benefited from an inclusion of a qualitative component, in order to make their findings more useful and contextually meaningful. Thus, a mixed methods design was considered for this PhD research, as it has the potential of revealing the common and individualised meanings related to the methods of self-harm used, and the reported reasons for self-harm; it can explore how the correlates of self-harm identified in the quantitative survey relate to self-harm. Broadly, a mixed methods approach can reveal the general socio-cultural context related to understanding self-harm in adolescents in Ghana.

The consensus within the area of self-harm research is that, self-harm is a complex behaviour (e.g., Chandler, Myers & Platt, 2011; Hawton et al., 2012). Thus, researchers have underscored the need to adopt quality interdisciplinary studies and robust research approaches – including mixed methods (Rogers & Apel, 2010) and stand-alone qualitative methods (Hjelmeland, 2016) – which take cognisance of the cultural, historical, and subjective experiences of the participants in the attempt to understand the behaviour (Chandler et al., 2011; White, 2016).

1.2.8.1. Ethical Considerations

1.2.8.1.1. Ethical Approval

To safeguard the ethical integrity of this PhD research, ethical approval was obtained from two Institutional Review Boards (IRBs): the School of Psychology Ethics Committee (Ref. №: 16-0373), University of Leeds, UK, where the researcher was based as a PhD Candidate, and the Ethics Committee for the Humanities (Ref. №: ECH078/16-17), University of Ghana, Accra, Ghana, Western sub-Saharan Africa, where data collection for the primary empirical studies of this thesis was conducted. Additionally, permissions were obtained from the Ghana Education Service, Greater Accra Regional Head Office (Ref. №: GES/GARISS5/358), and the Department of Social Welfare, National Head Office, Accra, Ghana (Ref. №: A345). Copies of the ethical approvals and permissions have been provided in Appendices 1.1 – 1.4. As an epidemiological study involving minors and young people, the researcher adhered to the relevant ethical

requirements at every stage of the research process – from the research protocol development stage, collection of data and analyses, through the writing and presentation of this thesis (Piasecki, Dranseika & Waligora, 2017). The specific relevant ethical considerations made, and the requirements adhered to, in order to protect the participants, researcher, data collection process, data, and the general ethical integrity of this thesis included addressing iatrogenic effects concerns, informed consent, voluntary participation and withdrawal anonymity and confidentiality, risks, benefits and compensation, and data protection and storage.

1.2.8.1.2. Iatrogenic effects concerns

There are concerns that asking about self-harm (and suicide) is potentially harmful and thus can plant the idea of self-harm in the minds of participants and even trigger actual self-harm (Hasking, Lewis, Robinson, Heath & Wilson, 2019; Robinson et al., 2011). This was a concern raised in the primary studies involved in this thesis, hence the need to devote some space to discuss the evidence which warrants or refutes this concern, and how this concern was managed in this project.

1.2.8.1.2.1. Does asking and talking about self-harm induce self-harm-related behaviours in young people?

Some parents/guardians, teachers, school heads, and frontline health professionals commonly raise concerns about iatrogenic effects in self-harm and suicide related assessment and research (e.g., Owens & Charles, 2017; Quinnett, 2019; Robinson, McCutcheon, Browne & Witt, 2016). Iatrogenic effects refer to the myth and misconception that asking about the presence of self-harm or suicide means “giving individuals the idea to engage in this behaviour when they would not have otherwise thought to do so” (Nock, 2010, p. 343). Reportedly, some Institutional Review Boards may request significant changes in research protocols or may decline approving proposed studies altogether due to iatrogenic effects concerns (e.g., Andriessen et al., 2019; Hom, Podlogar, Stanley & Joiner Jr., 2017; Lakeman & FitzGerald, 2009a; Lloyd-Richardson, Lewis, Whitlock, Rodham & Schatten, 2015; Singhal & Bhola, 2017; Swannell et al., 2014). Thus, the commonly held view of iatrogenic effects remains a challenge, particularly, for researchers seeking to recruit (young) participants for self-harm and suicide related studies (Lakeman & Fitzgerald, 2009b).

1.2.8.1.2.2. What is the evidence for iatrogenic effects in self-harm research?

The question as to whether or not asking or talking about self-harm induce self-harm related behaviours in young people has been addressed fairly in the literature. Evidence is scarce in support of iatrogenic effects; there is rather a plethora of research evidence supporting the non-existence of any iatrogenic effects in self-harm and suicide research. Primary studies including randomised control trials (Gould et al., 2005; Harris & Goh, 2017; Muehlenkamp, Swenson, Batejan & Jarvi, 2015), 'pure' qualitative studies (Biddle et al., 2013; Bjärehed, Pettersson, Wångby-Lundh & Lundh, 2013), experimental analysis (Bender et al., 2019; Cha et al., 2016; Hom et al., 2018), large cross-sectional studies (Lockwood, Townsend, Royes, Daley & Sayal, 2018; Robinson, et al., 2011; Whitlock, Pietrusza & Purington, 2013), and school-based prevention programmes (e.g., Muehlenkamp, Walsh & McDade, 2010) have all failed to provide any evidence in support of iatrogenic effects in self-harm research with young people. Even though participating in such studies may induce minimal negative mood states (e.g., Biddle et al., 2013; Deeley & Love, 2010; Harris & Goh, 2017), recent systematic review (Dazzi, Gribble, Wessely & Fear, 2014) and meta-analysis (DeCou & Schumann, 2018) show that participating in self-harm or suicide related studies neither induces nor leads to self-harm enactment or increases the frequency of the behaviour. In fact, the evidence suggests that asking about self-harm rather improves help-seeking attitudes and behaviours among young people (e.g., Muehlenkamp et al., 2010), and leads to reductions in thoughts of self-harm, as some participants find their role in the research context as a way of relieving pent up emotions and negative moods (e.g., Smith et al., 2010; Dazzi et al., 2014).

1.2.8.1.2.3. Iatrogenic effects concern in the present study

In the present study, no iatrogenic effects concerns were raised by the IRBs which granted ethical approval for the study. However, some parents and guardians of the in-school adolescent participants (n=19) declined providing permission for their wards to take part in the study, even though in some cases their wards were willing to participate. In these instances, the parents/guardians were thanked for letting the primary researcher know about their concerns and withheld permission, but their wards were not pursued for inclusion in the study. This exclusion was to ensure that no conflict arose between the primary researcher and the parents/guardians and the schools of their wards. Overall, the heads and staff of the selected schools, charity organisations, the Ghana Education Service, and the Department of Social Welfare were positive and in support of this study.

Additionally, as recommended by Finkelhor, Hamby, Turner and Walsh (2016), at the various venues of the data collection for this study (i.e., schools, charity facilities, etc.) the primary researcher carefully informed the participants about available counselling services, in case taking part in the research caused any distress. Also, the primary researcher provided each participant with the crisis helplines of the Ghana Mental Health Authority, and the Centre for Suicide and Violence Research - Accra, to call for support in case of self-harm crisis or general emotional problems.

The arrangement for counselling alternatives was made with four professional psychologists (two counsellors and two clinical psychologists) so as to ensure that, at least, one is readily available at any time their services were needed for the purposes of this research. The counselling service was to be accessed free of charge by the participants, but the consent of the parents/guardians of minors (aged between 13 and 17 years) was to be sought before the service could be offered. The primary researcher provided the counsellors with information about the study and offered some guidance as to ways of handling probable concerns and questions that the participating adolescents could bring up in case they visited.

Consistent with Nock's (2010) recommendation, in order not to unduly induce negative moods on the part of the participants, the sequence and arrangement of the sections of the questionnaire used for the survey was such that the specific questions assessing self-harm followed those sections and questions which asked about less sensitive issues (e.g., demographic items such age, gender, living arrangement etc.) so as to gradually work up to the questions that were more sensitive and difficult to discuss (e.g., self-harm, sexual orientation, illicit drug use, etc.). This same principle guided the construction of the qualitative interview protocol used in this study.

Finally, during the questionnaire survey, the primary researcher encouraged the adolescents to speak to him or any member of the research team if they had further questions about self-harm or any such related issues, while the research team was at the school premises, charity facility, or within the street census enumeration zone. Eleven students did this; each of them got in touch with the primary researcher to share bits of their histories of self-harm and indicated their willingness to participate in the one-to-one interviews where they would share their full stories at a not-too-distant future date with the primary researcher.

1.2.8.1.3. Informed consent

The primary researcher explained thoroughly to the participants the subject matter of the study, risks, benefits and roles of participants. In keeping with the recommendation by previous studies (Cherry, 2017; Berman & Silverman, 2017; Schaeffer & Presser, 2003; Embleton et al., 2015), the participants were provided with the exact definition of self-harm as applied in this study, with emphasis on "intentional", "act", and "irrespective of the apparent purpose of the act" (National Collaborating Centre for Mental Health, UK, 2004). Participant information sheets were handed out to participants. Participants were allowed to ask questions and raise any concerns they may have for the researcher to address them satisfactorily. Participants were allowed three days to decide on their participation. The consent of parents/guardians of adolescent participants aged between aged less than 18 years were sought by letters and consent forms sent through the adolescents to them. The permission of heads of the selected schools were sought through request letters and personal discussion with the primary researcher. The same process was followed regarding the street-connected adolescents who had contact with their families. However, where the street-connected adolescents had no contact with their families due to orphanhood, long distance (in the case of independent child migrants) or sheer resolution on the part of the adolescents to avoid any contact with their parents or guardians, the consent of the street social worker in charge of the street zone where the street-connected adolescents lived was sought. All participants were invited to participate and required to sign an actual written consent prior to participation.

1.2.8.1.4. Voluntary participation and withdrawal

All informants were assured and allowed voluntary participation in this study. Participants had the right not to answer any question or questions they felt uncomfortable with and they could withdraw from participation at any time if they did not want to continue. However, participants' request for retraction of information given during the research was allowed up until four months after the qualitative interviews, beyond which it was impossible as the thesis had to be prepared (or could be at final stages of preparation). Retraction of information from the questionnaire survey was impossible as it was entirely anonymous, and the answered questionnaires were grouped/mixed.

1.2.8.1.5. Anonymity and confidentiality

Selected in-school adolescents were assembled in a classroom (or their school's assembly hall, where available) and re-assured of confidentiality, with teachers asked to stay away from the survey venue. To further reinforce confidentiality, the sitting arrangement of the students was such that each student sat far apart from each other as far as the dimension of the classroom or assembly hall permitted. The same procedure was followed in the survey with the street-connected adolescents. However, here the venue for the administration of the survey varied depending on proximity, convenience, privacy and safety. Nearby clinics, community centres, charity facilities, and quiet corners of restaurants were used. The survey used was anonymous, as it did not solicit personal and other direct or potentially identifying information from participants (e.g., names, addresses, telephone numbers, names of schools etc.).

Similarly, due to the sensitive and highly stigmatised nature of self-harm and suicidal behaviour generally in Ghana (Osafo et al., 2015), all the qualitative interviews with the adolescents were conducted within private-but-secure spaces – e.g., nearby clinics, consulting rooms and offices of community centres, charity facilities, university research offices, designated unoccupied classrooms, and quiet corners of restaurants. The interview context was restricted to only the researcher and the individual participant. Participation in the interviews was possible if a participant permitted the interview to be audio-recorded. This enabled the researcher to transcribe the interviews for analysis.

1.2.8.1.6. Risks, benefits, and compensation

The major benefit of participating in this study was to contribute knowledge towards understanding and helping to reduce self-harm among adolescents in Ghana, and to help with the development of evidence-guided intervention and prevention strategies. The qualitative interviews were also expected to provide education about self-harm in adolescents and grant informants relief from certain painful emotions (Robinson et al., 2011). There were no significant risks or negative consequences beyond the risks in normal life involved in participating in this study. However, participants who experienced flashback of painful memories were referred for free counselling services to help ameliorate the effects of such negative memories. A snack voucher worth GH₵5 (equivalent to approximately £1 at the time of the fieldwork) was given to each street-connected adolescent who took part in the questionnaire survey only, while both in-school and street-connected adolescents who took part in both the questionnaire survey and qualitative interviews were each

given a lunch voucher worth GH¢10 (equivalent to approximately £2 at the time of the fieldwork). Additionally, participants who travelled to the venue for the interviews, reasonable compensation for the travel expenses was given. This was deemed as both an incentive and a compensation for the participants who spent relatively longer time participating in both the questionnaire survey and qualitative interview studies.

1.2.8.1.7. Debriefing

Sessions for debriefing after the anonymous survey and each interview were held to help allay any discomfort or fears that participants had.

1.2.8.1.8. Data protection and storage

Textual Data: The answered questionnaires, signed consent forms, and transcribed interviews were kept separately in a locked filling cabinet in the office of the primary researcher on the Legon campus of the University of Ghana, Accra. Keys and access to the filling cabinet was limited to only the primary researcher. Only the anonymised copies of transcripts were kept and used for analysis. Signed consent forms were sealed in an envelope and placed in a locked filing cabinet. Completed background information questionnaires and answered survey questionnaires were kept separately from the transcripts, in separate locked filing cabinets so that only the primary researcher is able to link real participant names with anonymised transcripts for the purposes of the research.

Electronic data: After each day's session of interviews, the audio-recorded interviews were immediately transferred from the audio recorder onto the University of Leeds password-protected and encrypted laptop of the primary researcher and deleted from the audio recorder. They were further transferred from the University of Leeds encrypted laptop onto the M-drive via the University of Leeds remote access server. The quantitative data (i.e., answered questionnaires) were entered into the statistical package for the social sciences (SPSS version 22.0 for Windows) using the University of Leeds password-protected and encrypted laptop. The complete quantitative data set entered in SPSS were transferred from the University of Leeds password-protected and encrypted laptop onto the M-drive via the remote access server. Additionally, both set of electronic data (recorded interviews and SPSS data) were backed-up on two separate encrypted external hard drives.

1.3. Structure of Thesis and Delineation of Chapters

This thesis covers three empirical studies (a systematic literature review and two primary studies) organised around five chapters described as follows:

Chapter 1: Introduction

This chapter sets out the outline of this PhD research. It begins by providing precise definitions of the key terms used in this research (e.g., self-harm, adolescent) to aid the interpretation of the literature of this thesis. An overview of the scientific background to the study, the research problem, the aims and objectives, and the research paradigm used and the justification for the choice are also provided. Further, this chapter provides an overview of the research setting and context of the population studied. This chapter ends with a description of the structure of this thesis and a delineation of the chapters.

Chapter 2: Self-harm in young people across Sub-Saharan Africa: A systematic review.

This chapter covers the first empirical study of this PhD research – a systematic literature review on the phenomenon of adolescent self-harm across sub-Saharan Africa. Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati et al., 2009), it provides a narrative synthesis of the available evidence (1950 – 2018) on the prevalence, major self-harm methods, key risk and protective factors, and the predominant reasons for self-harm in young people in sub-Saharan Africa. This chapter ends by highlighting the significant contributions of this review, adopting the AMSTAR – A MeaSurement Tool to Assess systematic Reviews (Shea et al., 2007) to indetify the strengths and limitations of this empirical study and makes recommendations for future studies.

Chapter 3: Prevalence and correlates of self-harm among in-school and street-connected adolescents in Ghana.

This chapter presents the second empirical study of this PhD research – a cross-sectional anonymous questionnaire survey of adolescents in school and street-connected adolescents in the Greater Accra region of Ghana. It describes the data collection sites, sample and sampling techniques used, the criteria for inclusion and exclusion of participants, the design and measures used, and the procedure followed to access the data. The chapter also presents the statistical analysis of the survey responses and a discussion of the results. Finally, this chapter identifies the significant strengths and limitations of this empirical study and makes recommendations for future studies. Generally, the reporting of the evidence from this study was guided by the checklist of items recommended for inclusion in

reports of cross-sectional studies as provided by the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines (Vandenbroucke et al., 2007).

Chapter 4: Adolescent self-harm in Ghana: Adolescents' lived experiences and stakeholders' views.

This chapter describes the research process and the findings of the third empirical study. It describes a qualitative interview study involving selected adolescent participants who reported self-harm history in study 2 (quantitative survey), and some key stakeholders of adolescents in Ghana (e.g., teachers, social workers, parents etc.). The aim of this study was to explore the lived experiences of adolescents with self-harm history and the views of key stakeholders on the major psychosocial and contextual risks and protective factors associated with self-harm, and suggestions for intervention and prevention of the behaviour adolescents in Ghana. Similarly, this also chapter describes the data collection sites, sample and sampling techniques used, the criteria for inclusion and exclusion of participants, the interview protocol used, and the precise procedure followed to access the interview data. The steps followed, and the measures taken to ensure the ethical integrity of the study are also described. Finally, the chapter presents the qualitative data analysis technique and process used to address the research questions, and the discussion of the findings. Besides identifying the strengths and limitations of this empirical study, this chapter makes recommendations for future research in the area. The reporting of the qualitative study in this chapter was guided by the COnsolidated criteria for REporting Qualitative research – COREQ-32 – (Tong, Sainsbury & Craig, 2007).

Chapter 5: General Discussion

This chapter provides a general integrative discussion of the key findings of all the three empirical studies and conclusions drawn. Given the exploratory and atheoretical nature of this research from the outset, this chapter seeks to synthesise and theorise about the findings across all three empirical studies in the light of current literature. The chapter concludes by identifying the key implications of the findings of this PhD thesis for health policy and intervention and prevention efforts. It draws on the primary empirical studies to outlines some key contributions and limitations of this PhD research and makes recommendations for future studies in the area of adolescent self-harm research.

Chapter 2

2.0. Self-harm in Young People Across Sub-Saharan Africa: A Systematic Review.

2.1. Introduction and Rationale

Much of the understanding regarding the phenomenon of self-harm in young people is based on literature from Europe (particularly, the UK), north America, and Australia (e.g., Brunner et al., 2014; Klonsky, 2007; Madge et al., 2008; Muehlenkamp et al., 2012; Swannell et al., 2014). A few global systematic reviews and meta-analyses (e.g., Grandclerc et al., 2016; Mortier et al., 2018) and regional systematic reviews with focus on self-harm and suicidal behaviours among young people in low-and middle-income countries (e.g., Aggarwal et al., 2017; McKinnon et al., 2016) have sparsely accessed papers from countries within sub-Saharan Africa.

Recent studies in mental health from sub-Saharan Africa have examined the prevalence estimates, correlates, associates, risk and protective factors related to psychological problems, emotional and behaviour outcomes of violence, abuse and maltreatment, and mental, neurological and substance use disorders, among young people in various settings within the sub-region (e.g., Asante et al., 2015; Davidson et al., 2015; Meinck et al., 2017; Magai et al., 2018; Nakigudde et al., 2016; Nkuba et al., 2018; Umar et al., 2018). Despite the emerging potential of child and adolescent mental health literature across Africa (Omigbodun & Belfer, 2016), no existing review has systematically appraised and synthesised the available evidence (if any) specifically on self-harm in adolescents within countries in sub-Saharan Africa. Such a review can (among other things) describe the reported reality and prevalence estimates of self-harm among adolescents in the sub-region, and potentially identify domains in the area requiring initial and further research attention.

More pointedly, such a review of the literature can point to the need for cross-national studies on self-harm among adolescents within the sub-region for the development of a sub-regional database, methodological options, comparison of studies, and ultimately for the formulation of potential contextually sensitive intervention and prevention models.

2.1.1. Aims

This systematic review of previous studies on the phenomenon of self-harm in young people within countries across sub-Saharan Africa[9] was conducted to, among other objectives, collate, appraise, and synthesise the available and accessible research evidence on the prevalence estimates, risks, protective factors, and reasons regarding the phenomenon. This review also partly sought to provide the basis for contextualising and informing the primary studies of this thesis. Specifically, this review sought to:

1) Describe the lifetime, 12-month/one year, 6-month, and 1-month prevalence estimates of self-harm in young people across sub-Saharan Africa.
2) Identify the commonest associates, risks, and protective factors associated with self-harm in young people observed in previous studies across sub-Saharan Africa.
3) Describe the commonest methods of self-harm in young people identified across the previous studies.
4) Describe the reported reasons for self-harm in young people as found in previous studies across sub-Saharan Africa.

2.1.2. What are risk factors, correlates, associates, and protective factors?

It is common to find in the research field of self-harm undefined, imprecise and inconsistent use of the terms “risk factors”, “correlates” and “associates”, whereas “protective factors” is often used to mean simply the reverse of risk factors (Fliege, Lee, Grimm & Klapp, 2009; Franklin et al., 2017; Kazdin, Kraemer, Kessler, Kupfer & Offord, 1997; Kraemer et al., 1997; Patel, & Goodman, 2007). The present review adopts the definitions of risk factors, correlates, and protective factors as provided by Kraemer et al. (1997) and Kazdin et al. (1997). A “risk factor” can be defined as “a characteristic, experience, or event that, if present, is associated with an

[9] Appendix 2.1 provides the list of countries in sub-Saharan Africa included in this review. The list of countries in sub-Saharan Africa considered for this review is based on the regional classification and list of 46 countries within the region provided by the United Nations Development Programme (UNDP, 2016, p. 269; UNDP, 2018, p. 108) and the World Health Organization (WHO, 2014a, p. 88).

increase in the probability (risk) of a particular outcome over the base rate of the outcome in the general (unexposed) population" (Kazdin et al., 1997, p.377). Stated differently, a "risk factor" represents a measurable agent or exposure that temporally precedes an outcome of interest and has a probabilistic relationship with the outcome; it is a measurable characteristic of each member in a specified population that precedes an outcome of interest (Kraemer et al., 1997). A risk factor is often used to categorise the population into two: low- and high-risk groups (Kraemer et al., 1997). Thus, basically, risk factors are antecedent conditions associated with an increase in the likelihood of harmful, undesirable, or unpleasant outcomes; an "outcome" refers to a characteristic or some event that one might want to prevent or promote (Kazdin et al., 1997). Studies with prospective designs, particularly, cohort study designs or longitudinal prediction designs are necessary and most effective for the unequivocal assessment of risk factors for an outcome (Franklin et al., 2017; Kazdin et al., 1997; Kraemer et al., 1997). Thus, the strength of the inference from risk-factor research is based on the fact that such studies are able to establish a clear time line and the temporal sequence between the onset of the antecedent first and the occurrence of the outcome later (Kazdin et al., 1997; Kraemer et al., 1997).

A "correlate" is a factor that has an association with an outcome, but the exact nature of the association is unclear and ambiguous (Franklin et al., 2017; Fox et al., 2015; Kraemer et al., 1997). Although a risk factor may accompany the outcome or result from the outcome, a correlate is measured at the same time point as the outcome; the temporal sequence of the antecedent and the outcome cannot clearly be identified (Kazdin et al., 1997; Kraemer et al., 1997), and as such has a correlation or an unclear association with the outcome. In mental health research, retrospective studies using self-report or other-report (i.e., cross-sectional study or case-control study) help to identify the correlates of an outcome of interest (e.g., self-harm) at a single point in time, hence provide less informative classification of the risk factors for the outcome (Franklin et al., 2017; Fox et al., 2015; Kazdin et al., 1997; Mars et al., 2014). Therefore, the challenge with correlates is that it is not possible to infer the status of one factor as an antecedent or risk factor for the other factor (Kazdin et al., 1997).

"Association" denotes any relationship between two variables, whilst "correlation" refers to the association between two quantitative variables, where the association is assumed to be linear – that one variable decreases or increases a fixed amount for a unit decrease or increase in the other variable (Howell, 2010; Sedgwick, 2012a, 2012b; The BMJ, 2010). However, in the present review,

although some retained studies reported correlations (correlates of self-harm), they did not demonstrate the linearity of the relationship between the reported "correlates" and self-harm. Hence, "associates" is used in this review generically to mean factors reported by the retained studies as having associations or correlations with self-harm.

"Protective factors" refers to "antecedent conditions associated with a decrease in the likelihood of undesirable outcomes or with an increase in the likelihood of positive outcomes" (Kazdin et al., 1997, p.377). In mental health, protective factors are those factors or characteristics present in the population that reduce the probability of suffering mental health problems – and in this view "protective factors" is used parallel to "risk factors" (Kazdin et al., 1997). Patel and Goodman (2007) have argued that in epidemiology, protective factors are not simply the reverse of risk factors, whether conceptually, methodologically or in their potential public health benefits. Aside from playing a buffering role against the adverse effects of exposure to the risk of negative outcome, protective factors also increase the likelihood of positive outcomes (Jessor, Turbin & Costa, 1998; Rutter, 1987). As with risk factors, longitudinal studies have been found useful in identifying protective factors in the health and well-being of children and young people (e.g., Manning, Davies & Cicchetti, 2014; Klasen et al., 2015; Otto et al. 2017; Wille et al., 2008).

2.2. Method

Prior to conducting this review, a systematic search within systematic review protocol registers (e.g., PROSPERO, the Cochrane Library, the Campbell Collaboration, the Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports, and the BMJ Open and Systematic Reviews) and the key electronic databases used for this review was performed to identify same or similarly worded (recently) published prospective or completed systematic reviews on self-harm in young people in sub-Saharan Africa. However, no such studies were found. Thus, to the knowledge of the author, the present review represents the first effort at providing a systematic synthesis of the available and accessible research evidence on the phenomenon of self-harm in young people within countries in sub-Saharan Africa.

The development of the methodology of this review was informed by several guides/manuals and sources for undertaking unbiased, comprehensive, auditable, and reproducible systematic reviews in healthcare and within the social sciences (e.g., Centre for Reviews and Dissemination [CRD], 2009; Fink, 2014; Petticrew & Roberts, 2006). An unpublished (non-registered) protocol guiding this review was completed in June 2016 by following the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols, PRISMA-P (Moher et al., 2015) and evaluated by the supervisory team of this thesis. This systematic review was performed by adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati et al., 2009). The PRISMA checklist has been completed for this review (see Appendix 2.2).

2.2.1. Literature search strategy and process

The search strategy designed for one database was tailored to the indexing style, limits, and peculiar features (e.g., variation in special fields, syntax, and proximity operators) available to the other databases selected for this review (Aromataris & Riitano, 2014; Sampson et al., 2008). This is owed to the fact that different official subject headings are used by the different databases (e.g., MEDLINE versus PubMed) and platforms (e.g., OvidSP versus Dialog), and as such performing separate searches result in identifying as many relevant studies as possible (Beynon, et al., 2013; Fink, 2014; Papaioannou, et al., 2010).

- Different terms and synonyms of self-harm, suicide and adolescents were entered as keywords (using Boolean logic to accommodate variations in truncation) to identify as many subject headings as possible.
- The searches for relevant publications in all the preselected databases were conducted using keywords, subject headings or MeSH terms and search syntax unique and appropriate to each database (see Appendices 2.3 – 2.4).
- As recommended by Pienaar et al., (2011) and Shenderovich et al., (2016), the formulation of the geographic search filter to identify countries in sub-Saharan Africa included names of the countries in both English and languages relevant to the countries (e.g., ‘Ivory Coast’ and ‘Cote d‘Ivoire’; “Cape Verde” and “Cabo Verde”). In instances where a country’s name had changed over time, after 1950 (Davis, 2005), both present-day and old names were included – e.g., ‘Democratic Republic of Congo’ and ‘Zaire’; “Burkina

Faso" and "Upper Volta", "Swaziland" and "eSwatini" [10] (see Appendix 2.5 for sub-Saharan African countries and regional search terms).

The host system of OvidSP was used to search the electronic scholarly databases of MEDLINE, and PsycINFO. Additionally, the following scholarly databases were searched: PubMed, African Journals OnLine, and African Index Medicus.

The search strategies used are shown in Appendix 2.6. The databases were each searched using keywords [e.g., (self-harm OR deliberate self-harm OR self-injury OR nonsuicidial self-injury) AND (Adolescen* OR Child* OR Students OR Teen* OR "Young adults" OR youth OR Orphans)] to identify records published between January 1950 and the start date of this review, June 2016. The earliest date, 1950, was chosen because research into suicide and non-fatal self-destructive behaviours in Africa began sparsely between the 1950s through the 1960s and 70s (e.g., Adomakoh, 1975; Asuni, 1962, 1967; Bohannan, 1960; Elsarrag, 1968; Jeffreys, 1952; Okasah & Lotaif, 1979; Rittey & Castle, 1972; Tooth, 1950; Weinberg, 1965). The initial database searches were performed on July 7, 2016 and updated up to December 31, 2018 on January 10, 2019.

Further attempts were made to include relevant grey literature (Paez, 2017). Postgraduate research theses on self-harm in young people in sub-Saharan Africa were identified by searching the South African national Electronic Theses and Dissertations (SA-ETD) portal. Google Scholar and Google Search have been identified as good sources of grey literature, institutional and organisational reports and government reports (Haddaway, Collins, Coughlin & Kirk, 2015). Google Scholar and Google Search were used to obtain additional records including postgraduate theses. However, to avoid the bubble effect – the situation where Google selectively produces only personalised information – the primary researcher logged out from all Google accounts (Curkovic, 2018; Ćurković & Košec, 2018; Holone, 2016; Piasecki, Waligora & Dranseika, 2018). The "related articles" and "cited by" links in Google Scholar were used to identify potentially relevant records. Publicly available potentially relevant government documents, national level and international reports (e.g., by WHO, World Bank, UNICEF, UNDP etc.) were also accessed. For instance, the country reports of data from sub-Saharan African countries which participate in the Global School-based student Health Survey (GSHS) were accessed on the WHO GSHS database

[10] As of June 1, 2018, eSwatini (or the Kingdom of eSwatini) is the name of the sub-Saharan African country formerly known as Swaziland.

(www.who.int/chp/gshs/country/en/) and the Centers for Disease and Control and Prevention (CDC) database (www.cdc.gov/gshs/countries/africa/index.htm).

Additionally, 19 authors and one public mental health research centre with longstanding research interest in self-harm, suicide, and child and adolescent mental health in Africa, and authors who published two or more articles on self-harm identified in this review were contacted via email correspondence for relevant (unpublished) records of studies from their individual collections to be considered for this review (see Appendix 2.7 for list of authors contacted). The inclusion of relevant grey literature was informed by two reasons. First, although the health, social, and biomedical sciences research and publication landscape in Africa is currently witnessing a growth of good quality scholarship, generally, there is a low level of scholarly publications in indexed academic journals from the continent; where available, significant scholarly works and African-based journals are often not visible in international academic databases (Chuang, Chuang, Ho & Ho, 2011; Hofman et al., 2009; Nwagwu, 2016; Rotich, 2011; Smart, 2005; Saxena et al., 2006; Tijssen, 2007). The second reason is that the inclusion of relevant grey literature reduces publication bias and biased conclusions of reviews, as relevant unpublished records are included (Fink, 2014; Mahood, Van Eerd & Irvin, 2014; Petticrew & Roberts, 2006; Shea et al., 2007).

Reference harvesting (searching potentially eligible titles in the reference lists of identified eligible papers and forward citations of key eligible papers) was also performed using Science Citation Index, Google Scholar, and manual search. Finally, hand searching of non-electronic materials and regional based African scholarly journals was performed in edited books, the West African Journal of Medicine, Ghana Medical Journal, South African Medical Journal, Ethiopian Medical Journal, and the East African Medical Journal.

A Senior Information Specialist and a health research information development support lead at the Leeds Institute of Health Sciences, University of Leeds, UK, was consulted by the primary researcher to ensure the robustness of the search strategy and the rigour of the search process. EndNote version X7 (Thomson Reuters, New York, USA) was used to collate the identified records, remove duplicates of the records, screen the titles and abstracts of the found records, and to access and screen the available full text of potential eligible studies, consistent with the PRISMA guidelines (Peters, 2017).

2.2.2. Study Screening and Selection

Based on a set of predetermined inclusion and exclusion criteria (see Table 2.1), all records that emerged from the literature searches were screened for eligibility by reading the titles, abstracts, methods, and results sections (Ng et al., 2014). Where an abstract was vague or had an indication of meeting the eligibility criteria, the full text of the paper was reviewed. Independent reviewers were not employed in this process. However, the primary researcher built consensus with the supervisors, particularly, with regard to studies to be excluded, and for about 10% – 20% accuracy check for studies included. A PRISMA flow diagram (Liberati et al., 2009) was used to inform and illustrate the literature search and selection process (see Figure 2.1). Data extraction forms were created to provide summaries of relevant details, including method and key findings of each select study (Appendix 2.8).

2.2.2.1. Criteria for Inclusion and Exclusion of Studies

Table 2.1 provides a thematic summary of the inclusion and exclusion criteria which guided the screening of eligible studies identified for this review. These are outlined in relation to “definition and measurement of self-harm”, “setting”, “participants”, “study designs”, and “prevalence estimates”.

2.2.2.1.1. Definition and measurement of self-harm

Strict definition of the concept *self-harm* did not apply in this review, as generally the literature is replete with disagreements as to a common definition, classification and nomenclature of the concept (Edmondson, Brennan, & House, 2016; Goodfellow, Kõlves & De Leo, 2018, 2019; Ougrin, Zundel & Ng, 2010; Silverman, 2006, 2011; Silverman & De Leo, 2016). However, for the purposes of replication and specificity, this study adopts self-harm to mean any intentional “act of self-poisoning or self-injury carried out by an individual irrespective of motivation” (NICE, 2012, p.14). Thus, a study was deemed eligible for inclusion in this review if it adopted “self-harm” to mean a behaviour that falls within the broad spectrum of intentional non-fatal self-destructive behaviours apart from suicide (see Table 2.1). In other words, a behaviour defined as self-harm is an act that (potentially) leads to bodily damage or harm, and that harm to self is intended (Hawton et at., 2007; Hawton, Harriss, Hall, Simkin, Bale, & Bond, 2003; NICE, 2012). Chapter 1 of this thesis (Section 1.1.1.5) outlines specific behaviours excluded from the adopted definition of self-harm.

This review classifies self-harm in terms of reported:

- “Method” [i.e. self-poisoning (e.g., ingestion of non-prescribed medication), and self-injury (e.g., self-cutting, self-burning etc.)],

- “Physical severity” (e.g., lethality or need for professional treatment),
- “Repetition history” (e.g., lifetime prevalence), and
- “Reasons or motive” for the act [e.g., to inflict pain or punishment, to die, self-validation, to achieve personal sense of mastery, sensation seeking etc. (Edmondson et al., 2016; Favazza, 2011; Hawton et al., 2012)].

Eligible studies must have reported clear means of case identification or measurement of self-harm. Previous reviews (e.g., Fliege et al., 2009) have reported several self-harm assessment or measurement methods adopted by primary studies. These include the use of (specified or unspecified) diagnostic case ascertainment at hospital admission or by inspecting medical records, chart reviews, or other medical documentation; standardised clinician rating based on clinical interview and medical documentation; interviews that were constructed ad hoc for the study; interviews for which validation data are available; single self-report (or interview) items; self-report questionnaire constructed ad hoc for the study; or self-report questionnaire for which psychometrical validation data are reported by the study.

2.2.2.1.2. Setting

Identified relevant studies conducted within both clinical and non-clinical contexts were assessed for eligibility. Potential original studies on self-harm involving non-clinical populations or samples of young people (e.g., population-based, community dwelling, neighbourhoods/ households, in-school, or street-connected etc.) were assessed for eligibility. Clinic-based studies on self-harm tend to have inherent biases in the selection of patients and often just a small proportion of persons who self-harm seek clinical help (Hawton et al., 2006; Hawton et al., 2012; Muehlenkamp et al., 2012). However, due to the paucity of studies on the mental health issues of young people in sub-Saharan Africa, relevant studies on self-harm involving clinical samples of young people (e.g., inpatient, outpatient, or emergency departments etc.) were assessed for inclusion in this review.

Studies focused on clinical groups or special populations of young people deemed to be at higher risk of self-harm, for example, young people in prisons or borstal institutions, young patients presenting to psychiatric institutions or identified because they have pervasive developmental disorders, cancer, insulin-dependent diabetes, epilepsy or HIV/AIDS young patients were not included in this review, unless control groups in such studies allowed for the evaluation of risk and protective factors of self-harm (Casiano, Katz, Globerman, & Sareen, 2013; Casale, Boyes, Pantelic, Toska, & Cluver, 2019; Hawton et al., 2006; Hedley, & Uljarević, 2018; Kyriakopoulos, 2010; Pelton & Cassidy, 2017).

Table 2.1. Summary of inclusion and exclusion criteria

Criterion	Include	Exclude
Definition and measurement of self-harm	– Studies with clear definitions of self-harm (or alternative term or concept used) as an intentional act of self-inflicted injury or poisoning, in addition to clear means of case identification, assessment or measurement.	– Studies focused on unintended self-harm behaviours (e.g., smoking, drink-driving, eating disorders etc.). – Studies focused on intended self-harm with socially sanctioned motives (e.g., scarification, manhood rituals, 'body enhancement', religious fasting, hunger strikes etc.). – Studies focused on intended self-harm behaviours not approved by the broader sociocultural context but are sanctioned by the subcultures (e.g., cult groups, Goth subcultures, Emo subcultures etc.) within which they occur. – Studies focused on suicidal ideations, self-harm thoughts, or threats, as these do not necessarily translate into or represent acts of self-harm (Favazza, 2011; O'connor, Rasmussen, & Hawton, 2012) – Studies focused on suicide (self-inflicted death).
Prevalence estimate	– Studies with specified time frames within which prevalence of self-harm was assessed.	– If prevalence estimates cannot be determined within a clear time frame; – If there is no clear indication of sample size and population denominator.
Setting	– Studies with primary focus on self-harm conducted within non-clinical contexts (i.e., general population, community, school-based, households/neighbourhoods, street-connected settings etc.) in countries within sub-Saharan Africa. – Studies conducted in clinical contexts focused on self-harm as the main presenting condition. – Clinical studies concerned with self-harm as the primary condition (but not as comorbid condition, e.g., self-harm in HIV/AIDS or epilepsy).	– Studies focused on adolescents in prisons or borstal institutions, unless control groups in such studies allow for the evaluation of risk and protective factors of self-harm in adolescents.

Table 2.1 (Continued)

Criterion	Include	Exclude
Participants	– Studies reporting prevalence estimates of self-harm involving participants aged between 10 and 25 years. – Studies reporting on the associates, risk and protective factors related to self-harm, methods of self-harm used, and reported reasons for self-harm involving participants aged 10 and 25 years with a personal self-harm history at the time of assessment for the study. – Studies with wide age range but majority (90% or more) of the participants are within the age bracket of 10-25 years.	– Adolescents with pervasive developmental disorders, cancer, insulin-dependent diabetes, epilepsy or HIV/AIDS adolescent patients, unless control groups in such studies allow for the evaluation of risk and protective factors of self-harm. – Studies involving participants within wide age ranges with the study results not disaggregated by age, making it impossible to link specific results to participants age 10-25 years, and where participants are stratified by age but with participants aged 10-25 years constituting less than 90% of the total sample which did not specifically link the reported prevalence estimates, identified risks or associates of self-harm, protective factors, methods of self-harm, or the identified reasons for self-harm to young people aged 10-25 years.
Study Designs	– Studies with focus on self-harm which address at least one of the four specified objectives of this review using: (1) quantitative methods (i.e., school-based, household-based, population/community-based cross-sectional survey; census; retrospective or prospective descriptive cohort designs; case controls; case reports; randomised controlled trials, and analytic cohort designs); or (2) qualitative methods (e.g., interviews, focus groups etc.); or (3) retrospective reviews of clinical records. – Cross-national studies involving countries in sub-Saharan Africa and other countries outside the sub-region, which stratify and link the results to the included countries. In such instances, the specified results related to the sub-Saharan African countries were included in this review.	– Studies based on the same dataset reported in an earlier publication included in this review. – Systematic reviews, commentaries, editorials, opinion pieces, correspondence, and articles not based on data. – Studies published in a language other than English. – Where full text of the identified article was unavailable or could not be accessed. – Cross-national studies involving countries in sub-Saharan Africa and other countries outside the sub-region, which did not stratify or link the results to the respective included countries.

2.2.2.1.3. Participants

Potentially relevant studies involving participants aged between 10 and 25 years old with a personal history of self-harm were screened for eligibility. Studies involving females only, males only, or both male and female participants were screened for eligibility (see Table 2.1).

2.2.2.1.4. Study Designs

For prevalence estimates **–** Cross-sectional surveys, cohort studies (retrospective and prospective) and census reporting the prevalence of self-harm in young people were screened for inclusion. Similarly, prevalence studies reporting the methods of self-harm and the risks or protective factors related to self-harm in young people were screened for inclusion in this review.

For risks, associates, and protective factors **–** Qualitative studies, case reports, case-control, analytic cohort studies and cross-sectional surveys with results identifying young people potentially at risk or protected from self-harm or similar studies identifying the risks, associates or protective factors related to self-harm in young people were screened for inclusion.

For reported reasons, and self-harm methods **–** Retrospective reviews of clinical records reporting the socio-demographic profiles, motives or reasons, or methods of self-harm in young people were also screened for this review. Cross-sectional surveys with evidence on motives for self-harm reported by young people were screened for inclusion.

2.2.2.1.5. Prevalence Estimates

Published questionnaire or survey-based studies reporting the prevalence estimates of self-harm in young people were considered for inclusion in this review if they specified the exact prevalence period or time frame within which the self-harm was assessed (e.g., lifetime, 12-month, 6-month etc.). Authors of studies with a simultaneous focus on prevalence estimates and associates of self-harm but who did not specify the prevalence period were contacted (via email correspondence) for clarification of the prevalence period as applied in their identified studies (e.g., Asante & Meyer-Weitz, 2017; Stansfeld et al. 2017; Vawda, 2012). Cross-sectional studies providing evidence on prevalence estimates of self-harm in young people were considered for inclusion in this review if there was clear indication of sample size.

2.2.3. Quality assessment of included studies

The appraisal of the methodological quality of records included in a systematic review is critical to the reliability and validity of the findings and conclusions drawn (Jarde, Losilla, & Vives, 2012; Onishi & Furukawa, 2014). The mixed method appraisal tool – MMAT – (Hong et al., 2018; Pace et al., 2012; Pluye et al., 2009; Pluye & Hong, 2014) was used to perform the quality appraisal of the final set of studies included in this review. For each category of study – quantitative, qualitative and mixed methods – the MMAT has five criteria which focus on the main relevant methodological components (Hong et al., 2018). The tool has been found to have satisfactory validity and reliability scores [Kappa scores > 0.8] (Pace et al., 2012; Pluye, & Hong, 2014; Souto et al., 2015). The MMAT is thus potentially robust for assessing and describing the methodological quality of different kinds of studies retained in a review: qualitative research, randomised controlled trials, non-randomised studies, quantitative descriptive studies, and mixed methods studies (Hong et al., 2018; Pluye et al., 2009; Pace et al., 2012; Pluye & Hong, 2014). The overall MMAT methodological quality score of each study included in this review was described using symbolic descriptors (asterisks) and percentages as follows: ***** (20% = low quality), *** *** (40% = average quality), *** * *** (60% = above average quality), *** * * *** (80% = high quality), and *** * * * *** (100% = very high quality).

2.2.4. Synthesis and analysis of evidence

Widely diverse definitions of self-harm were adopted by the included studies, and study designs and general methodological features were largely heterogeneous across the included studies. Thus, meta-analysis was deemed inappropriate and the narrative synthesis approach (Dixon-Woods et al., 2005; Mays et al., 2001; Petticrew & Roberts, 2006; Popay et al. 2006; Sandelowski et al., 2012) was adopted to synthesise the evidence from the included studies by following the three-step approach suggested by Petticrew and Roberts (2006, p.170): “(i) organizing the description of the studies into logical categories; (ii) analyzing the findings *within* each of the categories; and (iii) synthesizing the findings *across* all included studies”. The cross-study synthesis was aimed at providing an overall summary of the key findings of the included studies by identifying noteworthy variations and commonalities which could potentially influence the generalisability of the findings. Median values with interquartile ranges were used to present the prevalence estimates; Tables and graphical displays (e.g., forest plots) were used to aid the analysis process, even though no meta-analysis was performed (Ioannidis, Patsopoulos, & Rothstein, 2008; Petticrew & Roberts, 2006).

2.3. Results

The search for eligible records (available and accessible between 1950 and 2018) for this review yielded a total of 9,578 potentially eligible records, comprising 9,304 hits identified through academic database search and 274 titles obtained through other sources including portals of postgraduate theses, Google Scholar and hand searching of non-electronic relevant sources (see Figure 2.1). Finally, a total of 57 papers were included in this review after removing duplicates. Of the 57 papers, one (1.8%) was a national report on adolescent health behaviour, six (10.5%) were postgraduate theses, another one was a book chapter (1.8%), and 49 (85.9%) were peer-reviewed articles published in indexed academic journals (see Appendix 2.9 for specific authors).

2.3.1. Characteristics of Included Studies

2.3.1.1. Geographic distribution of studies

Data included in the 57 eligible studies were available from three of the four geographical sub-regions of sub-Saharan Africa: Eastern, Southern and Southern sub-Saharan Africa (Appendix 2.10 provides the distribution of the data sources for the included studies). The majority (65.6%) were from four countries within Southern sub-Saharan Africa (eSwatini, Namibia, South Africa, and Zambia); 19.7% was based on data from four Western sub-Saharan African countries (Benin, Ghana, Mauritania, and Nigeria); and 14.7% was based on data obtained from five countries within Eastern sub-Saharan Africa (Ethiopia, Malawi, Rwanda, Tanzania, and Uganda). No studies based on data from the Central or Middle sub-Saharan African sub-region met the inclusion criteria of this review; the studies accessed were mostly based on suicide, and where related to self-harm, the participants were mostly older than 25 years.

Thus, the 57 included studies were from less than 30% (13/46) of the countries within sub-Saharan Africa. South Africa ranked the highest with more than half (n=35) of the total included records. Five studies were conducted in Ghana, four were from Ethiopia, three from Nigeria, two from Uganda, and one each from Benin, Malawi, Rwanda, Tanzania, and Zambia. Three cross-national studies including data obtained from Benin, eSwatini, Ghana, Malawi, Mauritania, Namibia, Nigeria, and South Africa were also included (Appendix 2.11 tabulates the distribution of the included studies across the search period and countries in sub-Saharan Africa).

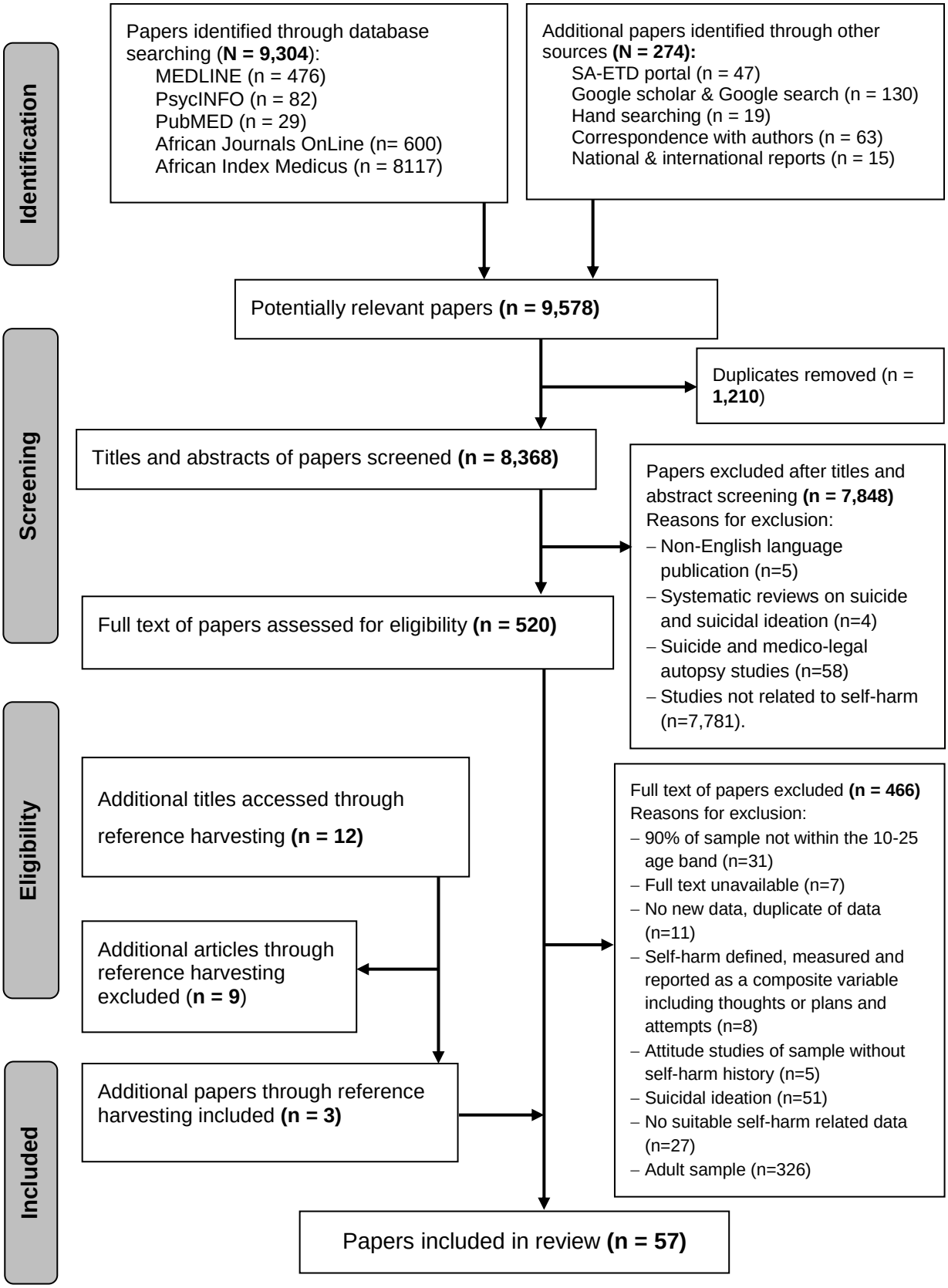


Figure 2.1. PRISMA flow diagram of literature search and extraction

The included studies were organised decade-wise covering sparse research reports in the 1980s through the 90s to more recent studies published in 2018 across sub-Saharan Africa on self-harm in young people. The earliest (Cummins & Allwood, 1984) and latest (van der Wal & George, 2018) records included in this review covered studies conducted in South Africa. Whereas the highest number of studies (n=35; 61.4%) was conducted between 2010–2018, no research records identified between 1950 and 1979 met the inclusion criteria for this review (Appendices 2.11 – 2.12 show the decade-wise distribution of the included studies).

2.3.1.2. Definition and Measurement of Self-harm

Definition: Generally, the included studies used various terms to mean self-harm. The specific term “self-harm” was used as the primary concept of measurement by two studies (i.e., van der Walt, 2016; van der Wal, & George, 2018). Whereas van der Wal, & George (2018) used the term to essentially mean self-injury, van der Walt (2016) defined it to cover both self-injury, self-poisoning and other forms of self-harm behaviours. Similarly, “deliberate self-harm”, “parasuicide”, “attempted suicide”, “self-inflicted serious injury”, “suicidal behaviour”, “non-fatal suicidal behaviour”, and “self-destructive behaviour” were variously used by some of the included studies to mean self-harm. Of the 57 studies reviewed, only 13 (22.8%) provided explicit operational definition of the specific term used to mean self-harm. For instance, Pillay (1987, p.1) used the term “parasuicide”, and defined it as “acts where the person may or may not be attempting to kill himself”; Sommer (2005, p.4) employed the term “suicidal behaviour” to mean “an episode of deliberate self-harm or a non-fatal injury (suicide attempt) which may be serious enough to warrant medical attention”; and, van der Wal and George (2018, p. 237) adopted Favazza’s (2011, p. 197) definition of “self-injury” to mean “self-harm”: “the deliberate, direct alteration or destruction of healthy body tissue without an intent to die”. Thus, consistent with the definitional criterion of this review, these definitions classified self-harm as an “intentional act or behaviour”, but not as “thoughts”, “ideations”, or “threats”, and excluded fatal outcome.

It is noteworthy that four (7%) of the studies reviewed that used the term “suicidal behaviour”, employed it to mean acts, and ideations, thoughts, or threats (Madu, & Matla, 2003; Sommer, 2005; Mashego, & Madu, 2009; Ng et al., 2015). However, these studies stratified the measurement, analysis, and results according to the categorisation of the suicidal behaviour applied (e.g., suicidal ideation, suicidal planning, suicidal threats, or suicide attempt). For inclusion in this review, only the stratified results related to “suicide attempt” were considered (WHO, 2014a). Other identified studies which used the omnibus definition of “suicidal

behaviour" (as constituting ideation, planning, and attempt etc.) but did not stratify the measurement and presentation of their results accordingly to the specific constituents of "suicidal behaviour" were excluded (see Figure 2.1).

The majority of the included studies, 39 (68.4%), used the term "suicide attempt", "suicidal attempt", or "attempted suicide". However, no specific, explicit definition was given to any of these terms used, apart from the single-item used in measuring the term ("measurement" of self-harm in the reviewed studies is discussed next in this section). For example, Omigbodun et al. (2008) used a single item to measure attempted suicide among secondary school students in Nigeria: "have you tried to kill yourself in the last year?" Similarly, in the South African Youth Risk Behaviour Survey conducted in 2002, 2008, and 2011 (James et al., 2017; Shilubane et al., 2013), a single self-report item was used to measure suicide attempt: "during the past 6 months, how many times did you actually attempt suicide (that is, take some actions to end your life)?" Also, all the WHO Global School-based Health Surveys used the question, "During the past 12 months, how many times did you actually attempt suicide?" (e.g., Asante et al., 2017; Liu et al., 2018; Nyandindi, 2017; Shaikh et al., 2016). Because, the wording of these single self-report items denotes actual "intentional acts" of self-harm, the identified studies using these items were included in this review.

The main concern of this review with regard to definition of self-harm is not only about how the specific questions used to measure self-harm were framed (Berman, & Silverman, 2017; Burless, & De Leo, 2001; O'Reilly, Kiyimba, & Karim, 2016), but more importantly, whether or not the exact meaning of "self-harm", "attempted suicide", "suicide attempt", "self-injury" (or whichever term used) was actually provided to the participants, in clear terms and language they understood (Schaeffer, & Presser, 2003). None of the included studies indicated if the definition was actually provided to or explained to participants. This has implications for the responses that participants provide in a research context (Schaeffer, & Presser, 2003; Berman, & Silverman, 2017).

Although self-harm was identified as an "intentional act" across all the reviewed studies, the specific forms/methods of self-harm were not the same across the included studies. For example, whilst Pillay & Wassenaar (1997, p.228) identified "parasuicide" as including "all self-harm behaviours (e.g. overdose, ingestion of poisons, self-laceration) without consideration of suicidal intent", van Rooyen (2013, pp.19-20) and Lippi (2014, p.8) limited the specific acts of "deliberate self-harm" to "inflicting damage to body tissue, including cutting, carving (for example, words and/or pictures), burning, scratching, piercing (excluding

tattoos and body piercings), abrading and bruising the body surface, as well as the intentional breaking of one's own bones". The point here is, whereas some studies conceptualised self-harm as covering both self-injury and self-poisoning (e.g., Madu & Matla, 2003, 2004; Pillay & Wassenaar, 1997; van der Walt, 2016), others restricted the behaviour to self-injury, exclusive of intentional self-poisoning (e.g., Lippi, 2014; van der Wal and George, 2018).

Measurement: The 57 studies included in this review were generally divided into two camps: those with focus on suicidal self-harm – i.e., suicide attempt, suicidal attempt, attempted suicide, suicidal behaviour, and non-fatal suicidal behaviour – (n=48; 84.2%), and those focused on non-suicidal self-harm – i.e., self-harm, deliberate self-harm, self-inflicted serious injury, self-injury, and parasuicide – (n=9; 15.8%). Various assessment tools and strategies were used, regardless of the definition (if provided) of the form of self-harm studied. Generally, self-harm was measured by four strategies: self-report questionnaire constructed ad hoc by the authors for the study (n=2; 3.5%), or a self-report questionnaire for which psychometric validation data are known and publicly available [e.g., the Deliberate Self-harm Inventory, the MINI International Psychiatric Interview for children and adolescents suicidality Scale, the Columbia Suicide Severity Rating Scale, the Suicide Probability Scale etc.] (n=10; 17.5%); other studies used an unspecified diagnostic case ascertainment at hospital admission (n=11; 19.3%), while some included studies assessed self-harm by a single self-report item, usually, requiring 'yes' or 'no' response (n=34; 59.6%). Thus, across the included studies, the use of a single self-report item (e.g., "have you ever tried to kill yourself?") was the predominant measure of self-harm.

2.3.1.3. Eligible papers reporting duplicate data

In order to avoid duplication of reported findings of the included primary studies in this review, identified publications and earlier studies with the same or similar focus reporting identical or similar results based on the same dataset were assessed for eligibility. The full text of the publications were closely read vis-à-vis the respective available earlier studies. An eligibility decision was made based on the review's criteria for inclusion and exclusion, and consensus reached with the primary researcher's supervisory team. Five peer-reviewed publications (Asante, 2015a; Asante & Meyer-Weitz, 2015, 2017; Asante, Meyer-Weitz & Petersen, 2014; 2016) were based on the same dataset of a postgraduate thesis (Asante, 2015b) reporting on the health risk behaviours and psychological functioning among homeless children and adolescents in the central business district of Accra, Ghana. The

findings on one-month prevalence estimates of suicide attempt was reported across all six records. However, of these six records, only one record (i.e., Asante & Meyer-Weitz, 2017), a peer-reviewed publication reporting on the one-month prevalence and factors associated with suicide attempt, was included in this review.

One article (Shilubane et al., 2013) included two separate earlier studies involving unique samples of adolescents from South Africa (Reddy et al., 2002; 2010). Shilubane and colleagues (2013) provided a peer-reviewed analysis of suicide and related health risk behaviours among in-school adolescents aged 13-19 years in South Africa, drawing on the data from the 2002, and 2008 South African Youth Risk Behaviour Surveys. Compared to the available original survey reports (Reddy et al., 2002; 2010), Shilubane and colleagues (2013) provided relevant methodological details and satisfactory analytical depth, meeting the inclusion criteria for this review. Therefore, Shilubane and colleagues' (2013) peer-reviewed paper was included in this review, whereas the available original survey reports (Reddy et al., 2002; 2010) were excluded. Similarly, the peer-reviewed publication (James et al., 2017) based on the 2011 South African Youth Risk Behaviour Survey data was included, whereas the available original survey report (Reddy et al., 2013) was excluded.

The peer-reviewed publication by Muula, Siziya and Rudatsikira (2013) reporting self-inflicted serious injuries among adolescents in Zambia based on the 2004 Zambia Global School-based Health Survey was included, but the main report of the survey (i.e., Sikazwe, 2004) was excluded from this review. Also, three peer-reviewed publications – Beekrum, Valjee and Collings (2011), Meissner & Bantjes (2017), and van der Wal and George (2018) – based on postgraduate theses by Beekrum (2008), Meissner (2013) and van der Wal (2017) respectively, were included in this review, but the respective theses were excluded as separate studies from this review. The respective theses were consulted for further methodological details during the critical appraisal of the peer-reviewed papers included in this review.

Also, two peer-reviewed publications by Madu and Matla (2003, 2004) were based on the same dataset. Both papers were included as separate studies as each paper focused on a unique segment of the data.

Finally, two postgraduate theses (Lippi, 2014; van Rooyen, 2013) were based on the same dataset, the 2009 University of Pretoria student survey, South Africa, on deliberate self-harm (sample size = 603). Van Rooyen (2013) reports lifetime and 11-month prevalence estimates, methods of deliberate self-harm, and reasons for deliberate self-harm; Lippi (2014) reports lifetime and 12-month

prevalence estimates, methods of deliberate self-harm, and factors associated with deliberate self-harm. Both theses were included in this review, as they report different results, apart from the results related to the methods of deliberate self-harm which were the same.

2.3.1.4. Design and Setting

Table 2.2 presents the designs used by the included studies. The majority of the included studies (n=41; 71.9%) utilised a quantitative cross-sectional design involving questionnaires administered or given out to participants accessed in communities/households, a charity facility, hospitals, schools and universities.

Three (5.3%) of the included studies using cross-sectional designs were cross-national in form (i.e., Cheng et al., 2014; Liu et al., 2018; Sommer, 2005). Sommer (2005) compared suicidal ideations, attempts, and associated factors between high school students in Port Elizabeth, South Africa, and Kiel, Germany; only the results related to South Africa were included in this review. Cheng at al. (2014) estimated the 12-month prevalence of attempted suicide and compared vulnerable youth living in poor urban neighbourhoods in different cities (i.e., Baltimore, New Delhi, Ibadan, Johannesburg, & Shanghai) in terms of mental health and social support; only the results related to Ibadan (Nigeria) and Johannesburg (South Africa) were included in this review. Lastly, Liu et al. (2018) examined the 12-month prevalence and factors associated with suicide attempt among adolescents in 40 low-and middle-income countries, using the WHO Global School-Based Student Health Survey data available from 2009 to 2013. The findings related to only the six countries from sub-Saharan Africa were included in this review: Benin, Ghana, Malawi, Mauritania, Namibia, and eSwatini (also known as Swaziland, until recently).

One study (i.e., Cluver, Orkin, Boyes, & Sherr, 2015) used longitudinal repeated structured interviews to determine whether cumulative exposure to adverse childhood experiences present as risks for later suicidal behaviour. Participants in this study were males and females aged between 10 and 18 years accessed within two South African provinces: Mpumalanga and the Western Cape. One study (Pillay, & Wassenaar, 1997) employed a case control design involving a clinical case group of suicidal patients admitted in the Pietermaritzburg general hospital in the KwaZulu-Natal and two control groups – a non-suicidal medical control group and a non-suicidal community control group – to identify the situations or events which appear to increase the odds of self-destructive behaviours in adolescents in South Africa.

Table 2.2. Methods and designs used by included studies (n=57)

Broad Method. n (%)	Design. n (%)	Brief Description	Author(s)
Quantitative: 49 (86)	Case control: 1 (1.8)	Clinical case control study involving suicidal patients and a non-suicidal medical control and a non-suicidal community control.	Pillay & Wassenaar (1997).
	Case series: 5 (8.7)	Quantitative descriptive content analysis of patient clinical records.	Cummins & Allwood (1984); Schlebusch (1985); Pillay (1987, 1988); Mhlongo & Peltzer (1999).
	Case study: 1 (1.8)	Quantitative descriptive analysis of structured interviews in hospital with out-patients who had history of attempted suicide.	Fine et al. (2012)
	Cohort design: 1 (1.8)	Longitudinal repeated structured interviews (1 year apart) in selected households within community.	Cluver et al. (2015).
	Cross-sectional: 41 (71.9)	Structured questionnaire survey given out in community / household	Asante, & Meyer-Weitz (2017); Gage (2013); Kinyanda et al. (2011); Cheng et al. (2014); Ng et al. (2015).
		Structured questionnaire survey administered at a charity facility	Swahn et al. (2012).
		Structured questionnaire survey given out at a hospital	Pillay & Wassenaar (1991)
		Structured questionnaire survey given out at school and university	School (n = 30): Amare et al. (2018); Asante et al. (2017); Baiden et al. (2018); Chinawa et al. (2014); Campbell, (2012); Flisher et al. (1993, 2006); James et al. (2017); Kebede, & Ketsela, (1993); Khuzwayo et al. (2018); Liu et al. (2018); Madu, & Matla (2003, 2004); Mashego, & Madu (2009); Muula et al. (2013); Nanewortor (2011); Nyandindi (2017); Omigbodun et al. (2008); Peltzer (2008); Peltzer et al. (2000); Penning, & Collings (2014); Randall et al. (2014); Shaikh et al. (2016); Shilubane et al. (2013, 2014); Sommer (2005); Stansfeld et al. (2017); van der Wal, & George (2018); Vawda (2012); Wild et al. (2004). University (n = 4): Lippi (2014); van der Walt (2016); van Niekerk et al. (2012); van Rooyen (2013)
Qualitative: 6 (10.5)	Case study design: 5 (8.7)	Qualitative in-depth interviews with attempted suicide survivors in a hospital and community.	Hospital (n = 3): Sefa-Dedeh, & Canetto (1992); Wassenaar et al. (1998); Beekrum et al. (2011). Community (n = 1): Shilubane et al. (2012) University (n=1): Meissner & Bantjes (2017)
	Case report: 1 (1.8)	Qualitative description of clinical symptoms, signs, diagnosis, treatment, and profiles of an individual patient.	Ogon & Etuk (2007).
Mixed method: 2 (3.5)	Sequential design: 2 (3.5)	Structured quantitative questionnaire survey followed by qualitative focus-group discussion or individual interviews with selected participants.	Shiferaw et al. (2006); Pretorius (2011).

Five studies (8.7%) used a retrospective chart review approach, involving the use of quantitative descriptive analysis of patient clinical records to examine the reported reasons and methods of self-harm in South Africa (Cummins & Allwood, 1984; Schlebusch, 1985; Pillay, 1987, 1988; Mhlongo & Peltzer, 1999). Finally, five studies (8.7%) used qualitative case study design (Beekrum et al., 2011; Meissner & Bantjes, 2017; Sefa-Dedeh, & Canetto, 1992; Shilubane et al., 2012; Wassenaar et al., 1998); one study (Ogon, & Etuk, 2007) used a qualitative case report approach; and two studies (3.5%) used a sequential mixed method design to examine the lifetime and 12-month prevalence estimates and the reported reasons for self-harm (Pretorius, 2011; Shiferaw et al., 2006).

2.3.1.5. Participants and Sampling

Participants in the included studies were young people aged between 10 and 25 years; where wider age ranges were involved, studies were only included when at least 90% of the sample were between the ages of 10 and 25 years. Four studies included only female participants (Beekrum, 2008; Gage, 2013; Sefa-Dedeh & Canetto, 1992; Wassenaar, van der Veen & Pillay, 1998); and the studies by Meissner and Bantjes (2017), and Ogon and Etuk (2007) involved only male participants. The majority of the retained studies in this review (n=51; 89.5%) involved both male and female participants.

The participants in the included studies were sampled from various contexts. The majority (n=36; 63.2%) of the included studies sampled students from schools and universities. Three studies (5.3%) sampled adolescents living in stable households (Cluver et al., 2015; Gage, 2013; Ng et al., 2015). Six studies (10.5%) sampled young people who were out of the school context, including adolescents living in poor, rural, war-affected communities (Kinyanda et al., 2011), adolescents in children's homes (Pretorius, 2011), children and youth living in slums and streets (Asante & Meyer-Weitz, 2017; Swahn et al., 2012a), adolescents living in poor urban and rural villages (Shilubane et al., 2012), and out-of-school youth who were unstably housed, living in poor urban neighbourhoods (Cheng et al., 2014). Seven (12.3%) of the included studies involved samples of adolescents presenting with self-harm to hospitals (Beekrum, 2008; Fine et al., 2012; Mhlongo, & Peltzer, 1999; Ogon, & Etuk, 2007; Pillay, & Wassenaar, 1997; Sefa-Dedeh & Canetto, 1992; Wassenaar et al., 1998). Taken together, it appears the retained studies generally were representative of the variety of contexts in which adolescents are found in sub-Saharan Africa.

The sample size of the included studies ranged from one informant, in a clinical case report (e.g., Ogon & Etuk, 2007) to 10,997 participants in a cross-sectional survey (James et al., 2017). The total sample covered by the included 57 studies was 108,183. Twenty-seven (47.4%) of the included studies used some form of randomisation (e.g., simple random sampling, multi-stage random sampling, multi-stage cluster sampling) in recruiting their participants, while 23 (40.4%) of the included studies used non-probability sampling techniques (i.e., convenient, purposive, and respondent-driven sampling strategies) to recruit their participants. However, in seven (12.3%) of the included studies, the exact sampling strategy used was neither mentioned nor the sampling process described. It is also interesting to note that across the 57 included studies, only 11 (19.3%) provided information on the size of their target population and how their sample sizes were predetermined.

2.3.1.6. Methodological Quality

Appendix 2.13 tabulates the methodological quality score of each included study. Overall, five (8.8%) of the included studies were rated “average quality”, whereas 19 studies (33.3%) were rated “above average quality”; 17 studies (29.8%) were rated to be of “high quality”, while the remaining 16 studies (28.1%) were rated to be of “very high quality” (Appendix 2.14 provides the summary of the overall quality appraisal of the included studies). No eligible study was excluded from this review on the basis of their methodological quality appraisal score. This was informed by two reasons: (i) the application of the MMAT to each eligible study was reliant on the information and methodological details reported in the full text article of the study. In many cases, the provision of these details could have been limited by the word count and other specific publication styles required by indexed academic journals, or in some cases, the style of reporting chosen by the authors (Shamseer, & Moher, 2018; Stevens et al., 2014), and (ii) generally, there is limited published research on self-harm in young people in LAMICs, including those within Africa (Aggarwal et al., 2017), and the exploratory nature of this review makes them worth retaining. Notably, however, even though no eligible study was excluded based on their quality appraisal score, the strict application of the inclusion criteria for this review ensured that the included studies were of good methodological quality.

2.3.2. Main Findings

2.3.2.1. Prevalence estimates of self-harm

Forty-one (71.9%) of the retained studies reported prevalence estimates of self-harm, covering lifetime, 12-month, 11-month, 6-month, 3-month, and 1-month. Of these 41 studies, 12 (29.3%) reported lifetime prevalence only, two studies (4.9%) reported lifetime and 12-month prevalence; one study reported lifetime and 11-month prevalence, while another study reported lifetime and 1-month prevalence. Eighteen (43.9%) of the 41 prevalence studies reported 12-month prevalence only, four studies (9.8%) reported 6-month prevalence only, one study (2.4%) reported 3-month prevalence only, and two studies (4.9%) reported 1-month prevalence only. Table 2.3 shows the prevalence estimates reported by the 41 studies.

The sample sizes involved in these 41 studies ranged between 142 (Mashego & Madu, 2009) and 10,997 participants (James et al., 2017), with response rates (where reported) varying between 86% and 96.8%. The earliest study (Flisher et al., 1993) and most recent included study (van der Wal, & George, 2018) reporting prevalence estimate of self-harm included in this review were conducted in South Africa (see Table 2.3).

As shown in Table 2.3, the reported lifetime prevalence estimates of self-harm across the 41 studies ranged from 1.4% (Kinyanda et al., 2011) to 48.3% (van Rooyen, 2013); the 12-month prevalence estimates varied between 2.8% (Penning, & Collings, 2014) and 35.8% (Lippi, 2014); the reported 6-month prevalence ranged from 12.7% (Ng et al., 2015) to 22.7% (Shilubane et al., 2014); and the 1-month reported prevalence estimates varied between 3.1% (Amare et al., 2018) and 26.4% (Asante, & Meyer-Weitz, 2017). Gage (2013) reported a 3-month prevalence of 2.3%, while van Rooyen (2013) reported an 11-month prevalence of 37%.

The majority of the 41 studies (n=34; 82.9%) focused on suicidal self-harm, six studies (14.6%) [Lippi, 2014; Muula et al., 2013; Penning, & Collings, 2014; van der Wal, & George, 2018; van der Walt, 2016; van Rooyen, 2013] focused on non-suicidal self-harm, while one study (Kinyanda et al., 2011) simultaneously reported the lifetime prevalence estimates of both suicidal self-harm (suicidal attempt) and non-suicidal self-harm (self-injury). Table 2.4 shows prevalence estimates of suicidal and non-suicidal self-harm across the 41 studies.

Table 2.3. Prevalence Estimates of Self-harm (by year and country of publication)

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
Flisher et al. (1993). South Africa.	Attempted suicide	School. Adolescents in high schools within the Cape Peninsula.	7340	10-19	Female (52.2%) & Male (44.5%).	Cross-sectional survey involving the use of standardised questionnaire given out at schools	–	Overall = 7.8% (F=10.12%. M=4.84%)	–	–	**
Kebede & Ketsela. (1993). Ethiopia.	Attempted suicide	School: Grades 9-11 high schools in Addis Abeba.	519	11-18	Female (44.7%) & Male (55.3%).	Cross-sectional survey: Structured questionnaire given out at schools.	Overall = 14.3% (F=13.8%, M=14.6%)	–	–	–	*****
Peltzer et al. (2000). South Africa.	Attempted suicide	School: Grade II secondary school pupils in Pietersburg	366	17-24	Female (59%) & Male (41%)	Cross-sectional survey: Structured questionnaire given out at schools.	Overall = 12.6%	–	–	–	***
Madu & Matla (2003) South Africa.	Attempted suicide	School: Adolescents in secondary schools in Limpopo Province.	435	15-19	Female (56%) & Male (44%).	Cross-sectional survey: Structured questionnaire given out at schools	Overall = 21% (F=18%, M=25%).	–	–	–	****
Wild et al. (2004). South Africa.	Suicidal attempt	School: Grades 8 and 11 students in Cape Town, South Africa	939	12-26	Female & Male (*proportions not reported*)	Cross-sectional survey: Structured questionnaire given out at schools.	–	Grade 8: Overall: 10%. (F = 13% M = 7%). Grade 11: Overall = 10%.(F = 14% M = 6%)	–	–	****
Sommer (2005). Cross-national (including South Africa).	Suicidal behaviour	School: Adolescents in urban high schools in Port Elizabeth.	299	14-18	Female (61.9%) & Male (38.1%).	Cross-sectional survey: Structured questionnaire given out at schools.	Overall = 16.1% (F = 12.7% M = 3.3%)	–	–	–	**

Table 2.3. (continued).

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
Flisher et al. (2006). South Africa.	Suicidal attempt	School: Grades 8, 9 and 11 students in six sites in South Africa	10,639	Mean age range: 14.0-19.7.	Female (57%) & Male (43%)	Cross-sectional survey: Structured questionnaire given out in school.	–	Grades 8 & 9: Overall = 9.7%. Grade 11: Overall = 8.8%	–	–	***
Shiferaw et al (2006). Ethiopia.	Suicidal attempt	School: Adolescents in preparatory schools in Dessie town.	667	15-25	Female (23.2%) & Male (76.8%)	Cross-sectional survey: Structured questionnaire given out in school.	Overall = 6.6%	Overall = 5.8% (F=7.1%, M=5.5%)	–	–	**
Omigbodun et al. (2008) Nigeria.	Attempted suicide	School: Students in secondary schools in the 11 rural and urban districts in Ibadan, Nigeria.	1429	10–17	Female (49.1%) & Male (50.9%)	Cross-sectional survey: Structured questionnaire given out in school.	–	Overall=11.7% (F=12.4%. M=11.0%)	–	–	****
Peltzer (2008). South Africa	Suicide attempt	School: Students in Grade 8 -11 students	1157	Mean age = 15.8	Female (69.1%) & Male (30.9%)	Cross-sectional survey: Structured questionnaire given out in school.	–	Overall = 24%	–	–	****
Mashego & Madu (2009). South Africa.	Suicidal behaviour	School: Adolescents selected from urban and rural schools around Welkom and Bethlehem, in the Free State, South Africa.	142	12-19.	Female (60.6%) & Male (39.4%)	Cross-sectional survey: Structured questionnaire given out at schools.	Overall = 14.8% [F=16.3% M=12.5%]	–	–	–	****
Kinyanda et al. (2011). Uganda.	Self-injury Suicidal attempt	Community: Adolescents living in war-affected and non-war-affected communities in rural north-eastern Uganda.	897	10-19	Female (52.9%) & Male (47.1%).	Cross-sectional survey: Researcher-administered structured questionnaire given out in war-affected and non-war-affected communities.	Self-injury =1.4%, Suicide attempt =1.7%	–	–	–	*****

Table 2.3. (continued).

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
Nanewortor (2011). Ghana	Attempted suicide	School: Adolescents in six schools in the Volta region of Ghana	383	Mean age = 16.46	Female (52.5%) & Male (47.5%).	Cross-sectional survey: Structured questionnaire given out at schools.	Overall = 8.1%	–	–	–	****
Campbell (2012) South Africa	Attempted suicide	School: Grades 11-12 pupils in Free State Province.	1033	16-24	Female (53.4%) & Male (42.3%).	Cross-sectional survey of students using structured questionnaire.	Overall: 12.5%. (F=18.1%. M=5.9%)	–	–	–	***
Swahn et al. (2012). Uganda.	Suicidal attempt	Community: Youth living in the slums of Kampala, Uganda.	457	13-15	Female (68.5%) & Male (31.1%).	Cross-sectional survey: Interviewer-administered structured questionnaire given out in eight drop-in centres.	–	Overall = 19.8%. (F=21.4%. M=16.2%)	–	–	****
van Niekerk et al. (2012). South Africa.	Suicidal attempt	University: Students in three Universities in South Africa.	810	≤ 25	Female & Male (*proportions not reported*).	Cross-sectional survey: Structured questionnaire given out at schools.	Overall = 5.8%	–	–	–	***
Vawda (2012). South Africa	Suicide attempt	School: Grade 8 students in Durban, South Africa.	219	13 - 15	Female (48.2%) & Male (51.8%).	Cross-sectional survey: Structured questionnaire given out at schools.	Overall = 5.48%	–	–	–	***
Gage (2013). Ethiopia	Suicide attempt	Community: Young girls living in the Amhara region, Ethiopia.	2709	10-17	Female only (100%)	Cross-sectional survey: Structured questionnaire given out in a community.	–	–	Overall = 2.28% *	–	****

Table 2.3. (continued).

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
Muula et al. (2013). Zambia.	Self-inflicted serious injury	School: Adolescents in Grades 7-10 in Zambia	2,136	13-16+	Female & Male (*proportions not reported*)	Secondary analysis of the 2004 Zambia Global School-based Student Health Survey: Structured questionnaire given out in school.	–	Overall = 11.8% (F=14%, M=9.5%).	–	–	*****
Shilubane et al. (2013). South Africa.	Suicidal attempt	School: Youth in schools across South Africa.	2002 SAYRBS = 10,549 2008 SAYRBS = 10,097	13-19	2002 SAYRBS: Female = (53.3%). Male = (46.7%). 2008 SAYRBS: Female = (51%) Male = (49%).	Secondary analysis of the 2002 and 2008 South African Youth Risk Behaviour Surveys (SAYRBS)	–	–	2002 SAYRBS: Overall = 18.5% (F=19.5%. M=17.3%). 2008 SAYRBS: Overall = 21.8% (F=22.7%. M=20.8%).	–	*****
van Rooyen (2013). South Africa	Deliberate self-harm	University: Undergraduate and honours Psychology students in a University in South Africa.	603	17-49	Female (80.1%) & Male (19.9%)	Secondary analysis of 2009 University of Pretoria student Survey: Structured questionnaire given out to university students.	Overall = 48.3%	Overall = 37.0% [n]	–	–	***
Cheng et al., (2014) Cross-national (including Nigeria & South Africa).	Suicidal attempt	Community: Adolescents living in poor urban neighbourhoods: Ibadan & Johannesburg	Ibadan = 449; Johannesburg = 496	15-19	Ibadan (Female=51 %; Male= 49%). Johannesburg (Female= 45%; Male=55%)	Cross-sectional survey. Structured questionnaire given out in poor urban neighbourhoods.	–	Ibadan: Overall=16.3. (F=14.3%; M=18.3%). Johannesburg: Overall:10.9%(F=10.0 %; M=11.8%)	–	–	****

Table 2.3. (continued).

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
Chinawa et al. (2014) Nigeria.	Attempted suicide	School: Adolescents attending three schools selected in Enugu and Ebonyi metropolis.	764	10-19	Female (35.7%) & Male (64.3%)	Cross-sectional survey in secondary schools.	–	Overall = 12.5%	–	–	**
Lippi (2014) South Africa.	Deliberate self-harm	University: Undergraduate and honours psychology students in a university.	603	17-49	Female (80.1%) & Male (19.9%)	Secondary analysis of 2009 University of Pretoria student Survey: Structured questionnaire given out to university students.	Overall = 46.1%. (F=45.34%. M=49.17%)	Overall = 35.8%.	–	–	***
Penning, & Collings (2014). South Africa.	Self-injury	School: Secondary school in Durban.	716	Mean age = 15.5	Female (34%) & Male (66%)	Cross-sectional survey. Standardised self-report questionnaires given out to secondary school students.	–	Overall = 2.8%	–	–	*****
Randall et al. (2014) Benin.	Attempted suicide	School: Adolescents in junior and senior high schools in Benin.	2,690	11-16	Female (33.1%) & Male (66.9%)	Secondary analysis of the 2009 Benin Global School-based Student Health Survey: Structured questionnaire given out in schools.	–	Overall = 28.3%	–	–	*****
Shilubane et al. (2014). South Africa.	Suicide attempt	School: Students in secondary schools in Limpopo province.	591	13-19	Female (50.3%) & Male (49.7%)	Cross-sectional survey. Standardised self-report questionnaires given out to secondary school students.	–	–	Overall = 22.7%. (F= 18.2%. M=27.0%)	–	****
Cluver et al. (2015). South Africa	Suicide attempt	Community: Adolescents in two urban and two rural health districts within two South African provinces.	3,401	10-18	Female (54.6%) & Male (45.4%)	Prospective study, using longitudinal repeated structured interviews involving adolescent in Mpumalanga and the Western Cape, South Africa.	–	–	–	Overall = 3.3%. (F=4.4%. M=2.2%)	****

Table 2.3. (continued).

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
Ng et al. (2015). Rwanda	Suicidal behaviour	Community: Within southern Kayonza and Kirehe Districts.	683 (living with HIV =218; HIV-affected=228; and unaffected by HIV in the family=237)	10-17	Female (51.54%) & Male (48.46%).	Structured interviews carried out in participants' homes, with child and caregiver interviews conducted separately.	–	–	Children living with HIV= 21.10%; HIV-affected children = 21.49%; Children not affected by HIV = 12.66%	–	*****
Shaikh et al. (2016). Malawi.	Suicide attempt	School: Pupils in 50 government primary schools in Malawi.	2225	11-16	Female (53.4%) & Male (46.4%)	Secondary analysis of the 2009 Malawi Global School-based Student Health Survey: Structured questionnaire given out in schools.	–	Overall = 12.9% (F= 13.2%. M= 12.4%)	–	–	*****
van der Walt (2016). South Africa	Self-harm	University: Students in a University in South Africa.	201	19-24	Female (55%) & Male (45%)	Cross-sectional survey. Standardised self-report questionnaires given out university students.	Overall = 19.4%	–	–	–	***
Asante et al. (2017). Ghana	Suicide attempt	School: Students in 25 senior high schools in Ghana.	1984	≤ 11, ≥ 18	Female (45.7%) & Male (53.7%)	Secondary analysis of the 2012 Ghana Global School-based Student Health Survey: Structured questionnaire given out in schools.	–	Overall = 22.2% (F= 23.5%. M= 21.1%)	–	–	*****
Asante, & Meyer-Weitz, (2017). Ghana.	Suicidal attempt	Community: Street-connected children and youth in the central business district of Accra.	227	Mean age = 12.58	Female (46.3%) & Male (53.7%)	Cross-sectional survey: Interviewer-administered structured questionnaire.	–	–	–	Overall = 26.4%. (F=37.5%; M=20.3%)	****

Table 2.3. (continued).

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
James et al. (2017). South Africa.	Suicidal attempt	School: Students in grades 8-11 in 196 secondary schools across South Africa.	10,997	Mean age = 16.4	Female (53%) & Male (47%)	Secondary analysis of the 2011 South African Youth Risk Behaviour Survey (SAYRBS)	–	–	Overall = 17.8%	–	****
Nyandindi (2017). Tanzania	Suicide attempt	School: Students in 50 primary and secondary schools across Tanzania.	3793	≤ 12-18+	Female (50.9%) & Male (49.1%)	Secondary analysis of the 2015 Tanzania Mainland Global School-based Student Health Survey: Structured questionnaire given out in schools.	–	Overall = 11.5%. (F= 11.9%. M= 10.3%)	–	–	*****
Stansfeld et al. (2017). South Africa	Suicide attempt	School: Grade 8 students in seven schools in Cape Town.	1034	13-19	Female (46.1%) & Male (53.9%)	Cross-sectional survey. Standardised self-report questionnaires given out to high school students.	–	Overall = 13.4%	–	–	****
Amare et al. (2018). Ethiopia	Suicide attempt	School: Students in Grades 9-12 in three high schools in Dangila Town, Ethiopia.	573	15-19	Female (51.7%) & Male (48.3%)	Cross-sectional survey. Standardised self-report questionnaires given out to high school students.	Overall = 16.2% (F= 14.8%. M= 17.7%)	–	–	Overall = 3.1%	*****
Baiden et al. (2018). Ghana	Suicide attempt	School: Students in 25 senior high schools in Ghana.	1633	14-18	Female (49.4%) & Male (50.6%)	Secondary analysis of the 2012 Ghana Global School-based Student Health Survey: Structured questionnaire given out in schools.	–	Overall = 21.1% (F= 23.2%. M= 19.6%)	–	–	*****

Table 2.3. (continued)

Author (year) Country	Term	Setting & population	Sample			Data source	Prevalence estimate				Study quality
			Size	Age range	Gender		Lifetime	12-month	6-month	1-month	
Khuzwayo et al. (2018). South Africa	Suicide attempt	School: Grade 10 students in 16 high schools across the uMgungundlovu District, KwaZulu-Natal Province, South Africa.	1759	13-23	Female (50.4%) & Male (49.6%)	Cross-sectional survey. Standardised self-report questionnaires given out to high school students.	–	Overall = 15.2% (F= 22.9%. M= 7.2%)	–	–	***
Liu et al. (2018). Cross-national (including Benin, Ghana, Malawi, Mauritania, Namibia, & eSwatini).	Suicide attempt	School: Students in primary and secondary schools across the selected countries.	Benin = 2649 Ghana = 3543 Malawi = 2212 Mauritania = 1976 Namibia = 4410 eSwatini = 3612	12-18	Female (F), & Male (M): Benin: (F=35%; M=65%) Ghana: (F=46.2%; M=53.8%) Malawi: (F=53.1%; M=46.9%) Mauritania: (F=52.9%; M=47.1%) Namibia: (F=52.8%; M=47.2%) eSwatini: (F=52.5%; M=47.5%)	Secondary analysis of the WHO Global School-based Student Health Survey data of the selected countries: Structured questionnaire given out in schools.	–	Benin = 28.2% (F= 28%; M=28.2%) Ghana = 26.4% (F=27.4%; M=25.5%) Malawi = 11.1% (F=10.7%; M=11.4%) Mauritania = 16.9% (F=16.6%; M=17.2%) Namibia = 25.6% (F=24.2%; M=27.1%) eSwatini =16.2% (F=16.1%; M=16.3%)	–	–	*****
van der Wal, & George (2018). South Africa.	Self-harm	School: Students in Grade 10 in nine secondary schools in the Free State Province, South Africa.	962	14-18	Female (57.9%) & Male (41.7%)	Cross-sectional survey. Standardised self-report questionnaires given out to secondary school students.	Overall = 17.4%. (F= 19.4% M= 14.5%)	–	–	–	***

Note: F = Females M = Males

***** Reported prevalence period was 3 months. **ⁿ** Reported prevalence period was 11 months.

Table 2.4: Reported prevalence estimates of suicidal and non-suicidal self-harm

Category	Range of prevalence estimates			
	Lifetime	12-month	6-month	1-month
Suicidal self-harm*	1.7% – 21%	7.8% – 28.3%	12.7% – 22.7%	3.1% – 26.4%
Non-suicidal self-harm"	1.4% – 48.3%	2.8% – 35.8%	–	–

Note:

* Suicidal self-harm covers estimates from studies that reported attempted suicide, suicide attempt, suicidal attempt, suicidal behaviour, and non-fatal suicidal behaviour.

" Non-suicidal self-harm covers estimates from studies that reported deliberate self-harm, self-harm, self-injury, and self-inflicted serious injury.

It appears that, comparatively, studies using self-report single item measures (with 'yes' or 'no' response format), or caregiver-report rating scales generally tend to report prevalence estimates lower than those reported by studies using multi-item questionnaires or behavioural checklists (see Table 2.3 and Appendix 2.15). This is consistent with similar observations made in previous reviews from high-income countries that self-harm prevalence estimates obtained from self-report measure with single items may be underestimated (e.g., Madge et al., 2008; Muehlenkamp et al., 2012; Ougrin et al., 2012; Swannell et al., 2014).

2.3.2.1.1. Heterogeneity across prevalence-studies

The studies reporting prevalence estimates of self-harm were summarised by means of forest plots, to assess the heterogeneity of the reported prevalence estimates: lifetime, 12-month, 6-month, and 1-month (Figures 2.2 – 2.5). Visual inspection of the forest plots (showing each study plotted in a chronological sequence, their prevalence estimates and 95% confidence intervals), I-squared (I^2), and Q-statistics were used to assess the significance of the heterogeneity across the studies reporting prevalence estimates of self-harm. I^2 value (percentage of the total variation across the included studies that is attributable to heterogeneity rather than chance) greater than or equal to 50% (≥ 50%) was considered substantial in this review (Higgins et al., 2003; Zlowodzki, et al., 2007). All forest plots were created using the Jamovi Statistical Package[11] (version 1.0.0 Windows).

[11] It is noteworthy that, in the generation of forest plots, the Jamovi Statistical Package automatically pools the prevalence estimates included in the plots, using the random-effects-model, even if meta-analysis is not intended (as shown in Figures 2.2 – 2.5).

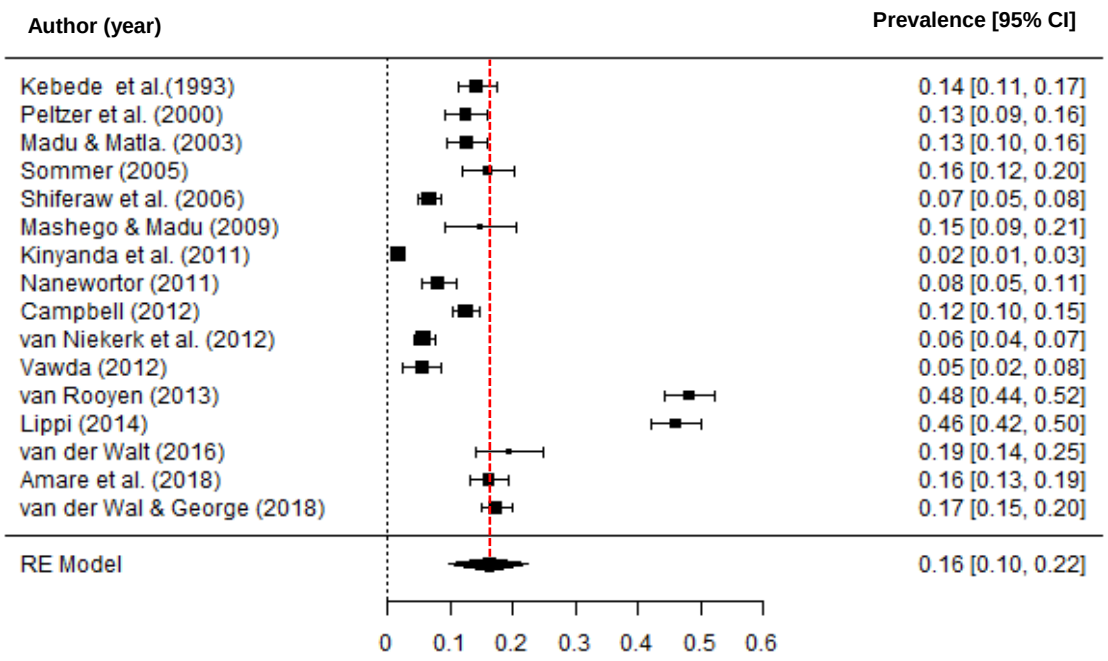


Figure 2.2. Summary of all studies reporting lifetime prevalence estimates. Heterogeneity was statistically significant (Q=1148.29, df=15, I^2=99.14%, p <.001).

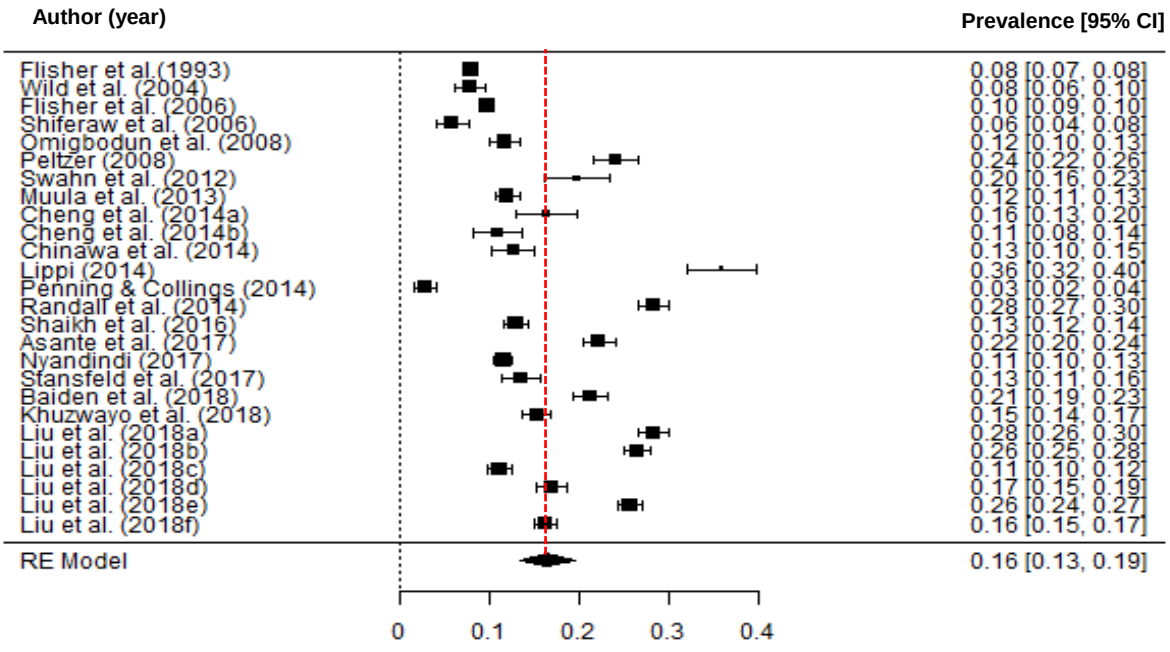


Figure 2.3. Summary of all studies reporting 12-month prevalence estimates. Heterogeneity was statistically significant (Q=2554.97, df=25, I^2=99.23%, p <.001).

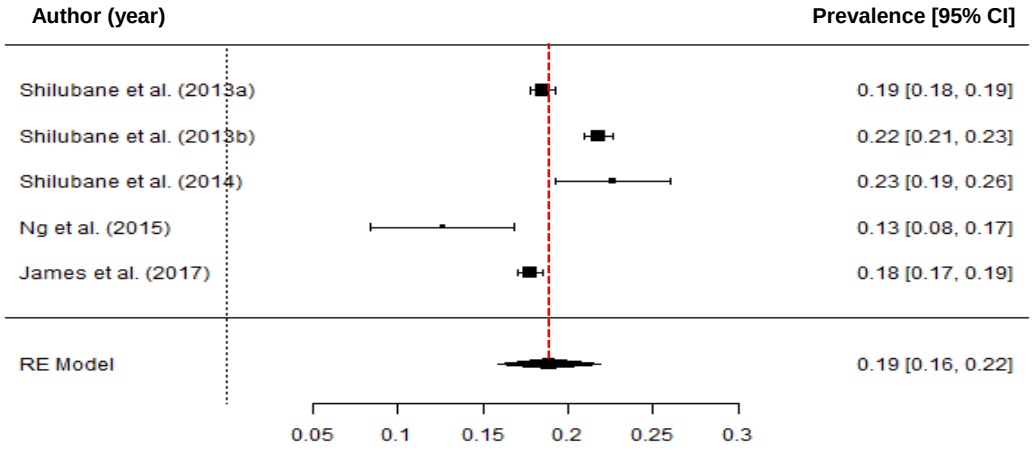


Figure 2.4. Summary of all studies reporting 6-month prevalence estimates. Heterogeneity was statistically significant (Q=71.44, df=4, I^2=97.38%, p <.001).

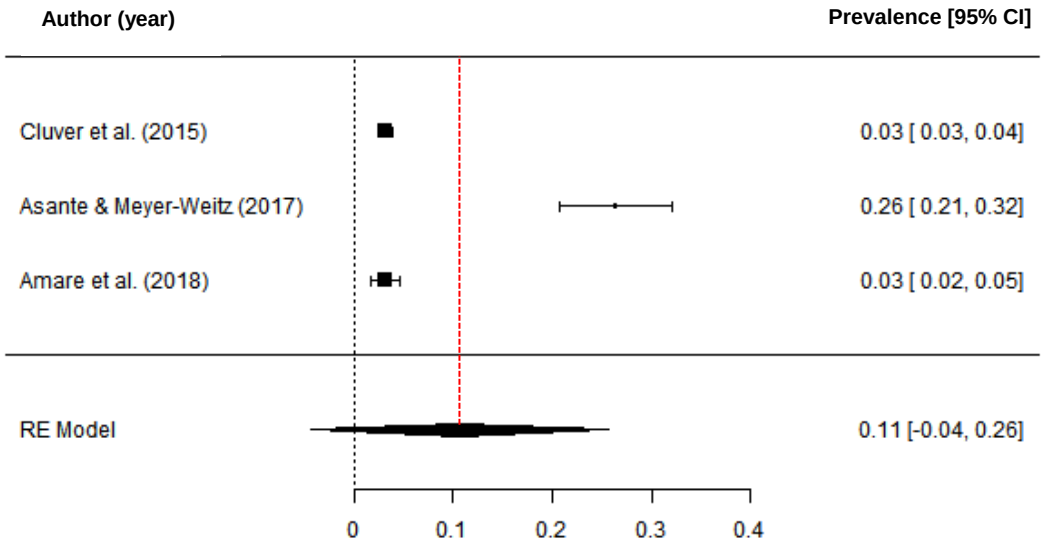


Figure 2.5. Summary of all studies reporting 1-month prevalence estimates. Heterogeneity was statistically significant (Q=62.21, df=2, I^2=99.66%, p <.001).

Overall, visual inspection of the forest plots of the lifetime, 12-month, 6-month, and 1-month prevalence estimates (Figures 2.2 – 2.5) indicates several non-overlapping confidence intervals in each plot (and in some cases where they overlap, there are wider confidence intervals), indicating heterogeneity. Studies with comparatively small sample sizes reported wider confidence intervals and outlier estimates (e.g., Asante & Meyer-Weitz, 2017; Mashego & Madu, 2009; Ng et al., 2015; Lippi, 2014; Shilubane et al., 2014; van Rooyen, 2013). Asante and Meyer-Weitz (2017), Lippi (2014) and van Rooyen (2013) reported the extreme outlier prevalence estimates. Also, the I^2 value ranges from 97.38% to 99.56% ($p < .001$) indicating that heterogeneity across each of these summaries is statistically significant. Therefore, given the statistically significant levels of heterogeneity across all the three levels of summary of the included studies, the pooled prevalence estimates were not meaningful, as the heterogeneity among the included studies was likely due to factors other than chance. However, it appears, particularly, in Figures 2.2 – 2.3 for lifetime and 12-month prevalence estimates, that a small number of studies with more extreme estimates (e.g., Lippi, 2014, Randall et a., 2014, van Rooyen, 2013) are responsible for the elevated heterogeneity; otherwise, the reported estimates seem to cluster somewhat closely.

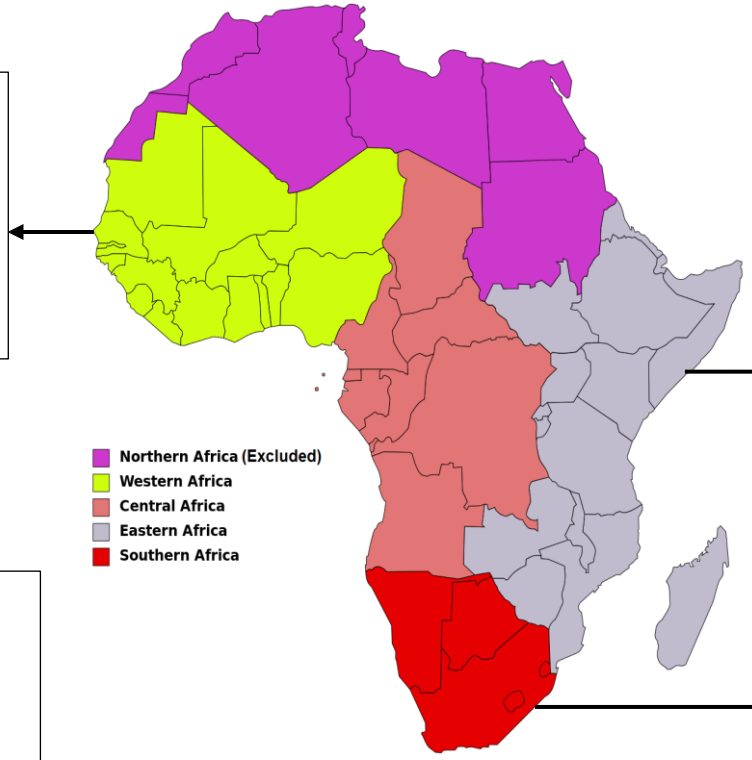
For additional clarity about the variability and clustering of the reported prevalence estimates, the median values with interquartile ranges were computed for the overall and sub-regional reported prevalence estimates (see Figure 2.6 below). Overall, considerable variability was found across the ranges of prevalence estimates reported: median lifetime prevalence estimate was 13.5% (with an interquartile range [IQR] of 7.4% – 16.8%); and median 12-month prevalence estimate was 14.3% (IQR: 11.1% – 22.2%). Studies from Western sub-Saharan Africa reported the highest 12-month prevalence estimates (median = 21.1%; IQR = 14.5% – 27.3%), while studies from Eastern (median = 12.2%; IQR = 11.1% – 16.9%) and Southern (median = 12.7%; IQR = 8.8% – 20.1%) sub-Saharan Africa reported relatively similar median 12-month prevalence estimates.

In sum, even though evidence is still sparse, the retained prevalence studies were varied in terms of study design, adolescent population, sample size, country, geographical sub-region, study dates, study quality, and other factors. The reported prevalence estimates of adolescent self-harm showed considerable variations within and across periods (i.e., lifetime, 12-month, 6-month, & 1-month), countries, sub-regions and the totality of sub-Saharan Africa.

Figure 2.6: Sub-regions of sub-Saharan Africa with data for the 57 studies included in review and self-harm prevalence estimates

Sub-region: **Western sub-Saharan Africa**
Proportion of eligible studies in review: 19.7%
Countries:
- Benin
- Ghana
- Mauritania
- Nigeria

Prevalence estimate:
12-month: Median = 21.1% (IQR: 14.5% – 27.3%)



Sub-region: **Eastern sub-Saharan Africa**
Proportion of eligible studies in review: 14.7%
Countries:
- Ethiopia
- Malawi
- Rwanda
- Tanzania
- Uganda

Prevalence estimates:
Lifetime: Median = 10.5% (IQR: 4.1% – 15.3%)
12-month: Median = 12.2% (IQR: 11.1% – 16.9%)

Overall: All 13 countries included in review.
Prevalence estimates (all prevalence studies):
Lifetime: Median = 13.5% (IQR: 7.4% – 16.8%)
12-month: Median = 14.3% (IQR: 11.1% – 22.2%)
6-month: Median = 18.5% (IQR: 15.3% – 22.3%)
1-month: Median = 6.3% (IQR: 3.1% – 26.4%)

Sub-region: **Southern sub-Saharan Africa**
Proportion of eligible studies in review: 65.6%
Countries:
- eSwatini
- Namibia
- South Africa
- Zambia

Prevalence estimates:
Lifetime: Median = 14.8% (IQR: 12.5% – 19.4%)
12-month: Median = 12.7% (IQR: 8.8% – 20.1%)
6-month: Median = 20.2% (IQR: 18.2% – 22.3%)

Note:
IQR = Interquartile range
Map source: Sub-regional division of sub-Saharan Africa based on the United Nations Statistics Division's classification (map accessed on January 20, 2019: https://unstats.un.org/unsd/methodology/m49/).

2.3.2.2. Methods of Self-harm

Twenty (35.1%) of the included studies reported on the methods of self-harm used by young people (Table 2.5). Of the 20 studies, 12 (60%) were clinic-based and eight (40%) were non-clinic based. Again, of the 20 studies, 18 were conducted in South Africa and one each from Ghana and Nigeria (Table 2.5). Consistent with the definition and categorisation of self-harm guiding this review (NICE, 2012), the predominant methods of self-harm reported by the included studies were broadly classified into “self-poisoning” and “self-injury”.

2.3.2.2.1. Clinic-based studies on methods of self-harm (n=12)

In 10 of the clinic-based studies (Beekrum et al., 2011; Cummins & Allwood, 1984; Ogon & Etuk, 2007; Pillay, 1987, 1988; Pillay & Wassenaar, 1991, 1997; Schlebusch, 1985; Sefa-Dedeh & Canetto, 1992; Wassenaar et al., 1998), the methods of self-harm were obtained from the clinical records of patients. As shown in Table 2.5, the self-harm methods were established in these studies by an unspecified diagnostic case ascertainment at hospital admission by a mental or medical health professional. The authors of the two other clinic-based studies [Fine et al. (2012) and Mhlongo & Peltzer (1999)] assessed the methods of self-harm through one-to-one structured interviews with young people (with a history of) presenting self-harm to a hospital. Table 2.6 shows that the patients in the study by Mhlongo and Peltzer (1999), predominantly, reported specific methods of self-poisoning (e.g., ingestion of paraffin, pesticides, medications etc.). In the cross-sectional interview by Fine et al. (2012) involving patients (n=50) with a history of presenting self-harm to a hospital, methods of self-poisoning [overdose (34%), and poisoning (4%)] and self-injury [cutting (75%), hanging (20%), and jumping from a height (6%)], plus other method [drowning (4%)] were found.

2.3.2.2.2. Non-clinic based studies on methods of self-harm (n=7)

One study (Pretorius, 2011) was conducted in children’s homes in South Africa. Pretorius (2011) assessed the methods of self-harm in adolescents by administering the Deliberate Self-harm Inventory (developed by Gratz, 2001) to 12 adolescents aged 12-17 years in four children’s homes in Pretoria, South Africa. The participants commonly endorsed cutting (91.6%); carving words into skin (91.6%); broken own bone (75%); punching self (66.6%); driving sharp object through skin (66.6%); carving pictures or pattern into skin (58.3%); and burning with a lighter or match (58.3%).

In two qualitative studies, both from South Africa, the authors assessed the methods of self-harm through self-report of the participants (Meissner & Bantjes, 2017; Shilubane et al., 2012). The participants reported hanging, ingestion of medications and poisonous substances, while other feigned their intentional self-injuries as car accidents.

The remaining four non-clinic based cross-sectional studies that reported methods of self-harm were conducted among students within educational settings in South Africa: schools (n=2) [Madu, & Matla, 2003; Sommer, 2005] and universities (n=2) [Lippi, 2014; van der Walt, 2016; van Rooyen, 2013]. It must be noted that the results reported by Lippi (2014) and van Rooyen (2013) were based on the same dataset, the 2009 University of Pretoria student survey in South Africa. Given the identical results of both studies, they are considered as the same (and counted as one) study on “methods of self-harm” in this review.

Madu and Matla (2003) and Sommer (2005) conducted cross-sectional surveys using structured questionnaires. Madu and Matla (2003) assessed the method of self-harm through the use of a single closed-ended question requiring participants (n=435) to select from a list of methods (i.e., drug overdose, hanging, stabbing, self-poisoning, other). Madu and Matla (2003) observed self-poisoning (44%), drug-overdose (25.3%), hanging (22%), and stabbing (2.2%), as the major self-reported methods of suicidal behaviour. However, Sommer (2005), used an open-ended question (“have you ever made an attempt to commit suicide; if yes, how?”) requiring participants (n=299) to note their methods of self-harm. Quantitative content analysis of the responses showed that taking tablets (47.2%), slashing of wrist (44.4%), and jumping from dangerous height (8.4%) as the predominant methods of attempted suicide. In the studies involving university students (Lippi, 2014; van der Walt, 2016; van Rooyen, 2013), the authors used standardised measures to assess methods of self-harm: in the study by Lippi (2014) and van Rooyen (2013), the Deliberate Self-harm Inventory (Gratz, 2001) was administered to 603 students, whereas van der Walt (2016) administered the Self-harm Inventory (Sansone, Wiederman & Sansone, 1998) to 201 students aged 19-24 years. As shown in Table 2.5, the analyses by Lippi (2014) and van Rooyen (2013) indicated that, predominantly, the participants endorsed methods of self-injury: cutting (21.9%), severe scratching (15.6%), carving words into skin (11.6%), burning oneself with a lighter or match (11%), sticking sharp objects into skin (8.6%), punching self (8%), carving pictures into skin (7.4%), burning with cigarette (7%), interfering with wound healing (6.5%), and banging head (5%).

Table 2.5 Predominant Form / Method of Self-harm by year of publication

Author (year) Country	Term	Setting & Design	Sample			Reported method of self-harm			Study quality
			Size	Age range	Gender	Self-Poisoning	Self-Injury	Other	
Cummins & Allwood (1984) South Africa	Suicide attempt	General hospital. Quantitative descriptive analysis of clinical records.	81	10-15years	Female (66.7%) & Male (33.3%)	Overdose = 79% (F=86%. M=64%)	–	Non-overdose = 18% (F=10%. M=36)	***
Schlebusch, (1985) South Africa	Parasuicide	General hospital. Quantitative descriptive analysis of clinical records.	159	Overall = 13-19 years	Female (73.6%) & Male (26.4%)	Overdose = 95% (F=70.5%. M=24.5%): Early adolescents = 27.1% (F=76.7%. M=23.3%) Late adolescents = 67.9% (F=73.1%. M=26.9%)	Cutting of wrists or arms) = 5% (F=3.1%. M=1.9%). Early adolescents = 0.6% (F=0.6%. M=0.0%) Late adolescents = 4.4% (F=57.1%. M=42.9%).	–	****
Pillay (1987) South Africa	Parasuicide	General hospital. Quantitative descriptive analysis of clinical records.	55	15-23years	Female (76%) & Male (24%)	All subjects had ingested substances, mainly medicinal.	–	–	***
Pillay (1988) South Africa	Self-destructive behaviour	General hospital. Quantitative descriptive analysis of clinical records.	87	14-25years	Female (78.2%) & Male (21.8%)	Self-poisoning (ingestion) = 93.1% (F= 82.7%. M= 17.3%); Carbon monoxide poisoning = 1.1% (F= 0.0%. M= 1.1%)	Wrist cutting = 1.1% (F= 1.1%. M= 0.0%) Hanging= 2.3% (F= 0.0%. M= 2.3%); Stabbing (serious) = 1.1% ([F= 0.0%. M= 1.1%); Jumping from height = 1.1% (F= 0.0%. M= 1.1%).	–	***
Pillay, & Wassenaar (1991) South Africa	Parasuicide	General hospital. Semi-structured interviews with patients presenting with self-harm.	40	15-20years	Female (65 %) & Male (35%)	Ingestion of pesticides (5%) Ingestion of medicinal preparations (95%)	–	–	***
Sefa-Dedeh, & Canetto (1992) Ghana	Attempted suicide	General Hospital. Qualitative clinical case study of clinical records.	2	Case A= 23 Case B=35.	Female (100%)	Case A: Overdose (Valium)	–	–	****

Table 2.5 (continued)

Author (year) Country	Term	Setting & Design	Sample			Reported method of self-harm			Study quality
			Size	Age range	Gender	Self-Poisoning	Self-Injury	Other	
Pillay, & Wassenaar (1997) South Africa	Suicidal gestures or behaviours.	General hospital. Case control study.	160 (case group=40; Non-suicidal medical patient control group= 40; A second non-clinical control=4)	15-20	Female & Male	Ingestion of household poisons = (5%) Ingestion of overdoses of medication = (95%)	–	–	*****
Wassenaar et al. (1998) South Africa	Attempted suicide	General Hospital. Qualitative clinical case study of clinical records.	3	Case A= 28 Case B=16 Case B=38	Female (100%)	Case B: Overdose (mother's blood pressure tablets and a bottle of analgesics)	–	–	****
Mhlongo & Peltzer (1999) South Africa	Parasuicide	General hospital. Patients' records and interviews with patients presenting with self-harm.	100	15-24	Female (63%) & Male (37%)	Paraffin (36%); Methylated spirit (12%); Shampoo (11%); Pesticides (10%); Detergent (9%); Battery acid (6%). Medicaments (3%).	Hanging (9%)	Ingestion of glass (4%);	***
Madu & Matla (2003) South Africa	Suicidal behaviour	School. Cross-sectional survey.	435	15-19	Female (56%) & Male (44%).	Self-poisoning (44%) – [F=48.8. M=39.6]. Drug overdose (25.3%) – [F=30.2. M=20.8]	Hanging (22%) – [F=31.3. M=11.6]; Stabbing (2.2%) – [F=0.0. M=4.2].	–	****
Sommer (2005) South Africa	Suicidal behaviour	School. Cross-sectional survey.	299	14-18	Female (61.9%) & Male (38.1%).	Taking tablets (47.2%);	Slashing of wrist (44.4%) Jumping from dangerous height (8.4%).	–	**
Ogon, & Etuk (2007). Nigeria	Suicide attempt	Teaching hospital. Qualitative case report.	1	10	Male (100%)	Ingestion of poison (rat poison).	–	–	**

Table 2.5 (continued)

Author (year) Country	Term	Setting & Design	Sample			Reported method of self-harm			Study quality
			Size	Age range	Gender	Self-Poisoning	Self-Injury	Other	
Beekrum et al. (2011) South Africa	Non-fatal suicidal behaviour (NFSB)	General hospital. Qualitative case study.	10	14-17	Female (100%)	All participants took overdose of prescription medication belonging to a family member: benzodiazepines, steroidal anti-inflammatories, and various blood pressure medications.	–	–	*****
Pretorius (2011) South Africa	Deliberate self-harm	Children's homes. Mixed methods.	12	12-17	Female (83.3%) & Male (16.7%).	–	Cutting (91.6%) Carving words into skin (91.6%) Broken own bones (75%) Punching self (66.6%) Sharp objects through skin (66.6) Burning with a lighter or match (58.3%) Carving pictures or patterns into skin (58.3%) Scratching (33.3%) Rubbing glass into skin (33.3%) Banging of head (33.3%) Preventing wounds from healing (33.3%) Burning with a cigarette (25%) Biting (8.3%) Dripping acid onto skin (8.3%) Bleach or oven cleaner onto skin (8.3%) Rubbing sandpaper (1.6%).		***
Fine et al. (2012). South Africa	Suicide attempt	Hospital. Quantitative descriptive analysis of one-to-one structured interviews with out-patients with histories of suicide attempt.	50	13-17	Female (62%) & Male (38%).	Overdose (34%) Poisoning (4%)	Cutting (75%) Hanging (20%) Jumping from a height (6%)	Drowning (4%)	***
Shilubane et al. (2012) South Africa	Suicide attempt	Community. One-to-one semi-structured qualitative interviews with adolescents with histories of suicide attempt.	14	13 – 20	Female (57.1%) & Male (42.9%).	Ingestion of: Medications (69.2%), Paraffin (7.7%) Disinfectant (7.7),	Burning (7.7%), Hanging (7.7%)	–	****

Table 2.5 (continued)

Author (year) Country	Term	Setting & Design	Sample			Reported method of self-harm			Study quality
			Size	Age range	Gender	Self-Poisoning	Self-Injury	Other	
Van Rooyen (2013)†. South Africa Lippi (2014)† South Africa	Deliberate self-harm	University. Cross-sectional survey	603	17-49	Female (80.1%) & Male (19.9%).	–	Cutting (21.9%) [F=23.6%. M=15%] Severe scratching (15.4%) [F=17.2%. M=8.3%] Carving words into skin (11.6%) [F=13%. M=5.8%] Burning with lighter or match (10.9%) [F=9.3%. M=21%] Sticking pins, needles, or staples into skin (8.6%) [F=8.1%. M=10.8%] Punching self (8%) [F=7.7%. M=9.2%] Carving pictures into skin (7.3%) [F=7%. M=8.3] Burning with cigarette (7%) [F=5.6%. M=12.5%] Interfering with wound healing (6.5%) [F=7.2%. M=3.3%] Banging head (5%) [F=4.6%. M=6.7%]	–	***
van der Walt (2016). South Africa	Self-harm	University. Cross-sectional survey	201	19-24	Female (55%) & Male (45%)	Alcohol abuse (22.9%) Overdosing (12.4%) Prescription medication abuse (6%)	Hitting yourself (12.9%) Head banging (11.9%) Cutting (9%) Scratching (8.5%) Exercised an injury on purpose (6%) Prevented wounds from healing (5%) Burning yourself (2%)	Promiscuous behaviour (19.9%) Made medical situations worse on purpose (13.4%) Reckless driving (10.4%) Starving (9.5%)	***
Meissner & Bantjes (2017) South Africa	Attempted suicide	University: One-to-one semi-structured qualitative interviews with students with histories of attempted suicide.	4	20-25	Male (100%): Gay (50%) Heterosexual (50%)	–	Hanging (50%) Feigned car accident (50%)	–	*****

Note: F = Females M = Males

† Lippi (2014), and van Rooyen (2013) were based on the same dataset, the 2009 University of Pretoria student survey, South Africa. Given the identical results of both studies, they are considered as the same (and counted as one) study on “methods of self-harm” in this review.

However, the participants in van der Walt's (2016) study reported methods of self-poisoning [alcohol abuse (22.9%), overdosing (12.4%), and prescription medication abuse (6%)], methods of self-injury [hitting yourself (12.9%), head banging (11.9%), cutting (9%), scratching (8.5%), exercised an injury on purpose (6%), prevented wounds from healing (5%), and burning yourself (2%)] and other methods of self-harm [promiscuous behaviour (19.9%), made medical situations worse on purpose (13.4%), reckless driving (10.4%), and starving (9.5%)].

Compared to methods of self-injury, methods of self-poisoning were predominantly reported in the clinic-based studies included in this review, particularly, "overdose of medication", with female patients more frequently reporting the method than males. However, among the studies conducted in non-clinical contexts (i.e., schools, universities, and children's homes), methods of "self-injury" (particularly, cutting or self-cutting) were frequently endorsed or reported. Generally, females scored higher, in terms of the frequency of using both self-injury and self-poisoning methods of self-harm, than their male counterparts. The reviewed studies that reported gender distribution in terms of the frequency of using or reporting specific methods of self-harm showed that more males reported violent methods (e.g., jumping, stabbing, hanging, and burning), whereas more females reported less violent or non-violent methods (e.g., wrist-cutting, ingestion of poison, and overdose of medication) [e.g., Lippi, 2014; Madu & Matla, 2003; Pillay, 1988; Schlebusch, 1985].

It is also interesting to note that even though the results presented by these 19 studies implied the use of multiple self-harm methods by the participants, none of the 19 studies reviewed, specifically, mentioned, described, or categorised the use of multiple self-harm methods by their participants. Studies from high-income countries have consistently shown that, often, (non-clinical samples of) young people endorse or report the use of multiple methods of self-harm, (e.g., DiCorcia, Arango, Horwitz & King, 2017; Laye-Gindhu & Schonert-Reichl, 2005; Madge et al., 2008). This is important to know, as the use of multiple methods of self-harm correlates strongly with the severity of harm and hospital presentations (Madge et al., 2008).

Generally, the retained studies on the reported methods of self-harm were mostly conducted among clinic and non-clinic based samples of adolescents in South Africa. Various methods of clinical and research assessment techniques were used to ascertain various forms of self-poisoning and self-injury. Overdose of medication was frequently reported across clinic-based studies, while self-cutting was the predominant method reported across the non-clinic based studies.

2.3.2.3. Associates, Risks, and Protective Factors

In this review, the evidence on the associates, risk and protective factors of self-harm was presented consistent with the risk-factor perspective provided by Kraemer et al. (1997) and Kadzin et al. (1997). Overall, 35 (61.4%) of the 57 included studies reported on the associates, risks and protective factors associated with self-harm in young people (see Table 2.6). The evidence was organised into four main domains: personal, family, school, and interpersonal domains (Table 2.5). Specifically, of the 35 studies that reported on the associates, risk and protective factors, only one study (2.9%) reported evidence on the risk factors associated with self-harm, as the study (i.e., Cluver et al., 2015) used a longitudinal approach; the remaining 34 studies (97.1%) used various approaches (within both clinical and non-clinical settings) to assess the associates of self-harm. In the light of the risk-factor perspective (Kadzin et al., 1997; Kraemer et al., 1997) applied in this review, no included study specifically reported on the protective factors related to self-harm.

2.3.2.3.1. Evidence on associates of self-harm

In terms of research setting, the 34 studies that reported on the associates of self-harm were divided into those conducted within clinical (n=7) and non-clinical (n=27) contexts.

Clinic-based associate-studies (n=7): Three of the studies conducted in a clinical context (Cummins & Allwood 1984; Mhlongo & Peltzer, 1999; Pillay, 1987) extracted the associates of self-harm from patients' clinical records using quantitative descriptive content analysis; another three studies (Beekrum et al., 2011**;** Sefa-Dedeh & Canetto, 1992; Wassenaar et al., 1998) used qualitative approaches to draw out the associates of self-harm from patients' narratives of self-harm. The seventh of the clinic-based associate-studies (i.e., Pillay & Wassenaar, 1997) used a case-control approach.

Mhlongo and Peltzer (1999) found teenage pregnancy (10%), mental illness (5%), problems with parents (22%), academic failure (14%), and romantic relationship problems (16%) as the key associates of self-harm among their patients (n=100). Similarly, Cummins and Allwood (1984), and Pillay (1987) found school problems, psychiatric problems, and family dysfunctions (e.g., parental divorce, conflict with siblings etc.) as key associates of self-harm (See Table 2.6).

Table 2.6: Associates, Risk and Protective Factors of Self-Harm (by year of publication)

Author (year) Country	Form of Self-harm	Data Source	Associates / Risk Factors					Associates / Protective Factors	Study quality
			Personal (%) [Female-Male (%)]	Family (%) [Female-Male (%)]	School (%) [Female-Male (%)]	Interpersonal (%) [Female-Male (%)]	Other (%) [Female-Male (%)]		
Cummins, & Allwood (1984) South Africa	Suicide attempt	General hospital. Quantitative descriptive analysis of clinical records from January 1, 1977 - December 31, 1982.	Psychiatric disturbance in indexed patient = 52% (F=50%. M=55%)	Family dysfunction (including divorce) = 89% (F=89%. M=88%); Family psychiatric illness = 32% (F=33%. M=30%)	School problems = 37% (F=35%. M=40%)	Socialization problems = 24% (F=26%. M=19%)	–	–	***
Pillay (1987) South Africa	Parasuicide	General hospital. Primary problems precipitating parasuicide were extracted from clinical files of Indian adolescents.	Medical/psychiatric illness (1.8%) [F= 1.8%. M=0.0%].	Problems with Parents (67.3%) – [F= 51%. M=16.3%]; Problems with siblings (7.3%) – [F5.3= %. M=2.0%]; Marital problems (3.6%) – [F= 3.6%. M=0.0%]	School problems (3.6%) – [F= 3.6%. M=0.0%];	Problems with boyfriends/girlfriends (16.4%) – [F= 11.0%. M=5.4%];	–	–	***
Sefa-Dedeh, & Canetto (1992) Ghana	Attempted suicide	General Hospital: Qualitative clinical case study. Women suicide attempt cases.	Failed sense of autonomy in the family	Family harassment and dispute	–	–	–	–	****
Kebede, & Ketsela (1993) Ethiopia	Attempted suicide	School-based cross-sectional survey using structured questionnaire.	Hopelessness; Heavy alcohol intake	–	Lower school grade	–	–	–	*****
Pillay, & Wassenaar (1997) South Africa	Suicidal gestures or behaviours	General hospital: Case control study involving Indian adolescents consecutively admitted (usually within 72 hours of the event) following a suicidal gesture.	Depression	Lower on family adaptability; Lower on family cohesion; Lower on level of family satisfaction; Higher on hopelessness; Higher on psychiatric disturbances.	Problems at school	Problems with intimacy or romantic relationships	–	–	*****
Wassenaar et al. (1998) South Africa	Attempted suicide	Hospital: Recent women suicide attempt cases presented to a psychology clinic in South Africa.	Hopelessness	Family communication breakdown / conflict with parents; Authoritarian patriarchy.	–	–	–	–	****

Table 2.6 (continued)

Author (year) Country	Form of Self-harm	Data Source	Associates / Risk Factors					Associates / Protective Factors	Study quality
			Personal (%) [Female-Male (%)]	Family (%) [Female-Male (%)]	School (%) [Female-Male (%)]	Interpersonal (%) [Female-Male (%)]	Other (%) [Female-Male (%)]		
Mhlongo & Peltzer (1999) South Africa	Parasuicide	General hospital: Retrospective content analysis of clinical records of youth referred to the clinical psychology section of a regional hospital from 1995 to 1998 in Letaba Hospital,	AIDS phobia (17%); Teenage pregnancy (10%); Mental illness (5%).	Problem with parents (22%)	Academic failure (14%)	Romantic relationship problems (16%)	Unemployment (9%); Financial problems (8%).	–	***
Peltzer et al. (2000) South Africa	Attempted suicide	School: Grade II secondary school pupils in Pietersburg. Cross-sectional survey using structured questionnaire.	Suicidal ideation, Suicide intent,	History of completed suicide in family; Parental divorced; Large family size.	–	History of completed suicide by friend.	–	–	***
Madu & Matla (2004) South Africa	Attempted suicide	School: Grades 9-12 pupils in Pietersburg. Cross-sectional survey using structured questionnaire.	–	Family conflict	–	–	–	–	****
Wild et al. (2004) South Africa	Suicidal attempt	School: Grades 8 and 11 students in Cape Town. Cross-sectional survey using structured questionnaire.	Depression; Poor global self-worth; Poor body image; Female gender.	–	Poor school work.	Problems with peers.	–	–	****
Sommer (2005) South Africa	Suicidal behaviour	School: Urban high schools in Port Elizabeth. Cross-sectional survey using structured questionnaire.	Female gender, Previous psychiatric contact,	Perceived lack of family support. Suicide attempt in the family,	–	Death of a friend	–	–	**

Table 2.6 (continued)

Author (year) Country	Form of Self-harm	Data Source	Associates / Risk Factors					Associates / Protective Factors	Study quality
			Personal (%) [Female-Male (%)]	Family (%) [Female-Male (%)]	School (%) [Female-Male (%)]	Interpersonal (%) [Female-Male (%)]	Other (%) [Female-Male (%)]		
Shiferaw et al. (2006) Ethiopia	Suicide attempt	School: Mixed method. Cross-sectional survey using structured questionnaire and focus groups.	Being sexually active / sexual activity; Female gender; Unwanted pregnancy; Feeling bored with life and the world around; HIV/AIDS positive status.	Previous suicide attempt by a family member, Lack of family support.	Academic under-achievement	Previous suicide attempt by a friend; Romantic relationship problems.	–	Family: Living with both biological parents.	**
Omigbodun et al. (2008) Nigeria	Attempted suicide	School: Cross-sectional survey of students using structured questionnaire.	Drinking alcohol (M); Having to go hungry (M).	Unstable family life (F); Having a mother who had been married more than once (F)	–	Sexual abuse (F); Physical attack; Engaging in physical fights	Living in urban location	–	****
Beekrum et al. (2011) South Africa	Non-fatal suicidal behaviour (NFSB)	General hospital. Qualitative case study approach: One-to-one semi-structured interviews with clinical sample of adolescents.	Hopelessness and despair (n=70%).	Previous suicide or attempted suicide by close family member (n=70%); Conflictual, disengaged or over-protective family relationships (n=100%); Physical and emotional abuse in the family; Strained adolescent-parent communication	Academic failure	Relationship breakups; Lack of social support.	Conflicting social roles and values in the context of contemporary acculturation pressures.	–	*****
Pretorius (2011) South Africa	Deliberate self-harm	Children's home: Adolescent in children's homes in the Pretoria area, Gauteng. Method of deliberate self-harm was assessed using the Deliberate Self-Harm Inventory (Gratz, 2001).	Personal history of suicide attempts suicide; Previous diagnosis of mood disorders (i.e., major depression, and bipolar disorder)	Abuse (i.e., physical, sexual, and emotional abuse) before removal from parental care; Experience of human trafficking before removal from parental care; Dysfunctional parenting (unavailability, conflict, or alcoholism) before removal from parental care; Family history of attempted suicide	–	Observation of the self-harm of another adolescent at the same children's home	–	–	***

Table 2.6 (continued)

Author (year) Country	Form of Self-harm	Data Source	Associates / Risk Factors					Associates / Protective Factors	Study quality
			Personal (%) [Female-Male (%)]	Family (%) [Female-Male (%)]	School (%) [Female-Male (%)]	Interpersonal (%) [Female-Male (%)]	Other (%) [Female-Male (%)]		
Campbell (2012) South Africa	Attempted suicide	School: Grades 11-12 pupils in Free State Province. Cross-sectional survey of students using structured questionnaire.	Female gender; Coloured race;	Stressful relationships with parents and extended family; Financial hardship	–	Stressful romantic relationship	Negative life events	–	***
Shilubane et al. (2012). South Africa	Suicide attempt	One-to-one semi-structured qualitative interviews with 14 adolescents (8 females & 6 males) aged between 13 and 17 years in the Limpopo Province.	Perceived accusations of negative behaviour Feelings of physical rejection Acute negative mood (e.g., depression, anger, hopelessness) Being unaware of community-support resources Personal history of attempted suicide	Conflictual and strained family relationships Lack of family support Family member HIV positive status Death of close family member Family history of attempted suicide Family poverty	–	Lack of trusted peer support Peer suicide attempt	–	–	****
Swahn et al. (2012) Uganda	Suicidal attempt	Drop-in centres serving youth living in slums in Kampala. Cross-sectional survey using (research-administered) structured questionnaire.	Sadness; Expectations of dying prior to age 30.	Parental neglect due to alcohol use,	–	–	–	–	****
Vawda (2012) South Africa	Suicidal behaviour	School: Grade 8 learners in government-run, co-educational middle school in Durban. Cross-sectional survey using structured questionnaire.	–	Family member suicide	–	–	–	–	***

Table 2.6 (continued)

Author (year) Country	Form of Self-harm	Data Source	Associates / Risk Factors					Associates / Protective Factors	Study quality
			Personal (%) [Female-Male (%)]	Family (%) [Female-Male (%)]	School (%) [Female-Male (%)]	Interpersonal (%) [Female-Male (%)]	Other (%) [Female-Male (%)]		
Gage (2013) Ethiopia	Suicide attempt	Cross-sectional survey involving adolescent girls in a community.	Currently employed Lost much sleep over worry Depression	Receiving marriage request Both parents deceased	–	Sexual violence victimisation	–	Other: Community involvement in child marriage prevention	****
Muula et al. (2013) Zambia	Self-inflicted serious injury.	Secondary analysis of the Zambia Global School-Based Health Survey conducted in 2004 (structured questionnaire given out at schools).	Female gender; Aged ≤ 14yrs; Loneliness; Poor night sleep due to worry; Hopelessness; Suicidal ideation; Marijuana use; Drunkenness; Use of dagga.	–	–	–	–	–	*****
Shilubane et al. (2013) South Africa	Suicidal attempt	Secondary analysis of data derived from the 2002 and 2008 South African Youth Risk Behaviour Surveys - SAYRBS	Female gender; Feeling hopeless; Feeling unsafe; Substance use; Having unsafe sex; Older age; Body dissatisfaction.	–	Lower grade;	Violence	–	–	*****
Chinawa et al. (2014) Nigeria	Attempted suicide	Cross-sectional survey in secondary schools involving adolescents.	Depression; alcohol use; and drug use.	–	–	–	–	–	**
Penning, & Collings, (2014) South Africa	Self-injury	Cross-sectional survey in secondary schools involving adolescents.	Female gender Negative child sexual abuse appraisals	Domestic injury Domestic assault	–	Rape Emotional abuse	–	–	*****
Randall et al. (2014) Benin	Suicidal attempt	Secondary analysis of the 2009 Benin Global School-Based Health Survey	Male gender; Anxiety; Loneliness; Substance use.	–	–	Being attacked.	–	–	*****
Lippi (2014) South Africa	Deliberate self-harm	University students. Cross-sectional survey using standardised questionnaires.	Severe depression	–	–	–	–	–	***

Table 2.6 (continued)

Author (year) Country	Form of Self-harm	Data Source	Associates / Risk Factors					Associates / Protective Factors	Study quality
			Personal (%) [Female-Male (%)]	Family (%) [Female-Male (%)]	School (%) [Female-Male (%)]	Interpersonal (%) [Female-Male (%)]	Other (%) [Female-Male (%)]		
Cluver et al. (2015) South Africa	Suicide attempts	Prospective study, using longitudinal repeated structured interviews involving adolescent in Mpumalanga and the Western Cape, South Africa.	Older age Female gender Orphanhood by AIDS, Orphanhood by homicide Previous suicide attempt	Parental AIDS-illness; Domestic violence; Food insecurity.	–	Severe physical abuse; Severe emotional abuse; Sexual abuse or rape.	Community violence.	–	****
Ng et al. (2015) Rwanda	Suicidal behaviour	Community: Structured interviews carried out in participants' homes, with child and caregiver interviews conducted separately.	Child mental health symptoms (i.e., Depression above diagnostic threshold; conduct problems).	–	–	–	–	Family: Good parenting.	*****
Shaikh et al. (2016). Malawi	Suicide attempt	Cross-sectional survey in secondary schools involving adolescents.	Female gender Early sexual debut Serious injury Loneliness Anxiety Suicide ideation Suicide planning Alcohol use	Parental tobacco use	–	Lifetime sexual partners Bullied Physical fight Physically attacked Physically bullied Number of days people smoked in presence weekly Having many close friends	–	–	*****
Asante et al. (2017). Ghana	Suicide attempt	Cross-sectional survey in senior high schools involving adolescents.	Anxiety Loneliness	–	–	Bullied Attacked Fighting Food insecurity Having many close friends	–	Family: Parental understanding	*****
Asante, & Meyer-Weitz, (2017). Ghana	Suicidal attempt	Cross-sectional survey administered to street-connected children and youth.	Female gender Aged 15 years or older Having been robbed Smoking Past alcohol use Present alcohol use Marijuana use Survival sex	–	–	Assaulted with a weapon	–	–	****

Table 2.6 (continued)

Author (year) Country	Form of Self-harm	Data Source	Associates / Risk Factors					Associates / Protective Factors	Study quality
			Personal (%) [Female-Male (%)]	Family (%) [Female-Male (%)]	School (%) [Female-Male (%)]	Interpersonal (%) [Female-Male (%)]	Other (%) [Female-Male (%)]		
Amare et al. (2018). Ethiopia	Suicidal attempt	Cross-sectional survey in high schools involving adolescents.	Living alone Loneliness Hopelessness Sleep disturbance worries Being physically hurt	–	Truancy for more than 3 days in past month	Poor social support	–	–	*****
Baiden et al. (2018). Ghana	Suicide attempt	Cross-sectional survey in senior high schools involving adolescents.	Anxiety Illicit substance use	–	–	Bullying victimisation	–	Personal: Physical activity. Interpersonal: Having at least one close friend.	*****
Khuzwayo et al. (2018). South Africa	Suicide attempt	Cross-sectional survey involving adolescents in school.	Aged 16 years and above Female gender Cannabis use	–	Threatened in school with a weapon Bullied in school	Dating violence victimisation Cyber bullying	–	–	***
van der Wal, & George (2018). South Africa	Self-harm	Cross-sectional survey involving adolescents in secondary schools.	Emotional reactivity Tension-reduction coping	–	–	–	–	Interpersonal: Social support	***

Notes:

F = Females M = Males

A reflection on the strengths and challenges with the categorisation of the factors (personal, family, school, interpersonal, and other) is presented in the Discussion section of this chapter (Chapter 2; Section 2.4.9):

Personal level factors: These include personal characteristics and histories, and factors related to personal (mental) health conditions.

Family level factors: These cover factors and circumstances within the family, and relationships and interactions with family members.

School-level factors: These relate to academic performance and relationships and circumstances within the school context.

Interpersonal level factors: These are circumstances related to the individual's relationships with peers and neighbours, and other social relationships and interactions outside the family and school contexts.

Other factors: These are factors related to cultural practices, sub-culture, ideologies, and the individual's physical environment.

The three qualitative studies (i.e., Beekrum et al., 2011**;** Sefa-Dedeh & Canetto, 1992; Wassenaar et al., 1998) analysed the narratives of patients presenting with self-harm to hospitals. The patients attributed their self-harm to various factors related to personal, family, school and interpersonal contexts. For example, some of the participants in the study by Beekrum et al. (2011) attributed their self-harm to "conflictual, disengaged family relationships" (e.g., "whenever my mother and I have a conversation, it always ends up being an argument. My sister and I can't see eye to eye. We can't even be in the same room together"), "previous suicide or attempted suicide in the family" (e.g., "my mother killed herself when I was 3. My aunt told me she took an overdose. My sister also took an overdose last year after a fight with her boyfriend); "Hopelessness and despair" (e.g., "I feel sad").

In the clinical case-control study, Pillay and Wassenaar (1997) used the Beck Hopelessness Scale (an existing standardised self-report questionnaire, for which psychometric validation data are available) to assess the associates of parasuicide in their participants (n=120). The participants endorsed the associates pre-identified in the questionnaire, as applied to them (e.g., depression, lower family cohesion, problems at school, romantic relationship problems, etc.).

As shown in Table 2.6, the associates reported at the personal level (e.g., depression, hopelessness, psychiatric illness etc.); family level (e.g., conflict with parents, physical and emotional abuse in the family etc.); school-level (e.g., academic failure etc.); and interpersonal level (e.g., breakup, romantic relationship problems, lack of social support etc.) appear consistent across the included clinic-based studies. However, broadly, visual inspection of the Table 2.6 reveals that the frequency of the associates within the family domain was higher in the clinic-based studies, followed (in order of frequency) by the personal-level, interpersonal, and school domain.

Non-clinic based associate-studies (n=27): Twenty-three studies used a cross-sectional survey design involving the use of structured questionnaire to assess the associates of self-harm in samples of adolescents in three non-clinical contexts (educational institutions [i.e., schools and universities], and out-of-school, community/household contexts). The remaining two studies, Pretorius (2011) and Shilubane et al. (2012), used qualitative interviews to assess the associates of self-harm in a cross-sectional sample of adolescents in children's homes and among a community sample of adolescents respectively.

School-based associate-studies (n=21): All the 21 school-based associate-studies used structured questionnaire surveys with pre-identified or checklist of the associates requiring participants to endorse or check as applied to

them. All the 21 studies developed statistical modelling (mainly logistic regression models) to identify the associates of self-harm. In seven of the school-based associate-studies (Amare et al., 2018; Asante et al., 2017; Asante, & Meyer-Weitz, 2017; James et al., 2017; Omigbodun et al., 2008; Shaikh et al., 2016; Shilubane et al., 2014), the authors pre-screened and selected candidate factors using bivariate relationship tests and rejected from the final multivariable logistic regression models factors which showed no statistically significant bivariate relationship with the outcome variable (i.e., self-harm). In the remaining 14 studies, some authors clearly indicated that all factors were included in the final logistic model regardless of their bivariate relationship with self-harm, whereas other studies did not explicitly report this, even though a closer inspection of the final logistic models reported showed that some form of pre-selection of candidate factors had been applied (e.g., Baiden et al., 2018).

Across the 21 school-based associate-studies, various associates of self-harm were identified. Within the personal domain, poor self-image, female gender, depression, suicidal ideation, anxiety, loneliness, hopelessness, alcohol use, being sexually active, being aged 16 years and above, and illicit drug use were found to be associated with increased odds of self-harm. In the family domain, family history of self-harm, family history of suicide, parental conflict, parental divorce, conflict with parent, domestic violence, large family size, lack of family support, and parental drug use were reported as key factors associated with increased odds of self-harm. Various factors at the school level (such as, academic underachievement or lower school grade, truancy, bullying victimisation in school), and the interpersonal level (including friend self-harm or suicide, sexual abuse, physical attack, engaging in a physical fight, bullying victimisation, food insecurity, having many close friends, poor social support, cyber bullying, and romantic relationship problems) were also found to be associated with increased odds of self-harm.

Furthermore, of the 21 school-based associate-studies, four studies identified living with both biological parents, parental understanding, engaging in physical activities, having social support, and having at least one close friend as factors associated with decreased odds of self-harm (Asante et al., 2017; Baiden et al., 2018; Shiferaw et al., 2006; van der Wal, & George, 2018). It is noteworthy that, among the 19 school-based associate-studies, only one study (Shiferaw et al., 2006) supplemented the questionnaire survey with qualitative focus group discussions with some of the survey participants, to explore further how the associates identified in the questionnaire survey were associated with self-harm, from the perspectives of the participants. The focus group discussions showed

divergent and mixed views by the participants regarding adolescents' vulnerability to self-harm, and the intensity of some of the factors associated with self-harm. For example, the participants disagreed on whether students in urban communities were more vulnerable to self-harm, compared to those in rural areas (Shiferaw et al., 2006).

Out-of-school, community/household-based associate-studies (n=4): Two studies [Swahn et al. (2012) and Asante & Meyer-Weitz (2017)] examined the associates of attempted suicide among street-connected children and youth in Kampala (Uganda), and Accra (Ghana) respectively. The other two studies recruited participants from households within community contexts in Ethiopia (Gage, 2013) and Rwanda (Ng et al., 2015).

Street-connected associate-studies (n=2): Swahn et al. (2012) constructed, ad hoc, a structured survey questionnaire (with pre-identified associates) based on existing youth surveys (i.e., the USA Youth Behaviour Survey, and the WHO Global School-based Student Health Survey) and administered this to their participants who attended a charity facility. Predominantly, the participants endorsed "parental neglect due to alcohol use", "feeling of sadness", and "expectations of dying prior to age 30", which were found to have statistically significant associations with increased odds of attempted suicide among youth living in the streets and slums of Kampala. Similarly, Asante, & Meyer-Weitz (2017) adopted various items from the South African National Youth Risk Behaviour Survey to assess the associates of attempted suicide among homeless children and adolescents within the central business district of Accra. The results showed that female gender, being aged 15 years or older, having been robbed, smoking, past alcohol use, present alcohol use, marijuana use, being involved in survival sex, being assaulted with a weapon were associated with increased odds of attempted suicide.

Two facts are worthy of note about these two studies. The first is that, contrary to recommended practice in research involving street-connected children and youth, Swahn et al. (2012) did not pre-screen their participants for the presence of any mental disorders or other behavioural challenges, factors which have been found to influence the responses of participants from this population in research contexts (Aptekar, & Stoeklin, 2014; Bassuk, Richard, & Tsertsvadze, 2015; Hutz, & Koller, 1999). Swahn et al. (2012, p.599) stated explicitly that, "no exclusion criteria were applied beyond the age range". Even though Asante, & Meyer-Weitz (2017, p.92) mentioned that "participants were eligible to participate in the study if they were not experiencing severe mental health problems, or problematic behaviours

manifested by their mannerism, attention, and concentration", the authors did not report whether or not any potential participants were excluded from the study, and if so the number of potential participants excluded on the basis of this criterion. The second fact is that, the authors of both studies reported that they pre-screened and selected candidate factors using bivariate relationship tests and rejected from the final multivariable logistic regression models factors which showed no statistically significant bivariate relationship with the outcome variable, suicide attempt. Pre-selection of candidate factors in logistic regression modelling is not a recommended practice (Babyak, 2004; Harrell, Lee & Mark, 1996; Sun, Shook & Kay, 1996).

Community/household-based associate-studies (n=2): Gage (2013) examined the association between child marriage and suicide attempt among girls aged between 10 and 17 years (n=2,623) living in the Amhara region of Ethiopia. The author constructed the survey items ad hoc. The results showed that girls who reported to be currently employed, have lost much sleep over worry, depressed, receiving marriage request, having both parents deceased, and experiencing sexual violence victimisation were at increased odds of suicide attempt, while "community involvement in child marriage prevention" was found to be associated with decreased odds of girls attempting suicide. In a one-time cross-sectional survey in Rwanda, Ng et al. (2015) used structured questionnaires (with pre-identified factors), previously validated in Rwanda, to assess some of the associates of self-harm, from the perspectives of young people and their caregivers. The authors found that depression and conduct problems as the significant associates linked with increased odds of attempted suicide in young people, whereas "good parenting" was significantly associated with decreased odds of attempted suicide (Ng et al., 2015).

Non-clinic based qualitative studies of associates (n=2): Pretorius (2011) used one-to-one qualitative interviews and participants' health records to assess the associates of self-harm in a cross-sectional sample of adolescents (n=12) in four children's homes in Pretoria, South Africa. Pretorius (2011) found from the health records of the participants (kept by the management of the children's homes) that several of the participants had previous diagnosis of major depressive disorder, and bipolar disorder. In the one-to-one interviews, some of the participants attributed their self-harm to personal history of suicide attempts, family history of attempted suicide (e.g., "My dad mostly tried to commit suicide when my step-mother and sister didn't get along... And then they'd get along, because of the attempt"), abuse (i.e., physical, sexual, and emotional abuse) before removal from parental care (e.g., "…It was just hitting and punishment. And then it got worse...

He'd started drinking more... He'd scare me on purpose, so I would wet my bed at night... Then he'd hit me because of it"), experience of human trafficking before removal from parental care (e.g., "My dad sold me to other people... They asked me to have sex with them, and they touched me"), dysfunctional parenting (unavailability, conflict, or alcoholism) before removal from parental care (e.g., "My mom and dad had a fight... He hit her in the face with a fist. And he hit her over her body, that she had bruises..."; "My mom wasn't there when I needed her... I don't have a mother-daughter relationship with her..."), and observation of the self-harm of another adolescent at the same children's home (e.g., "It's happened many, many times that I cut myself when I know of children in the children's home who had cut themselves").

Shilubane et al. (2012), conducted one-to-one semi-structured interviews with a community sample of 14 young men and women aged 13-20 years who had attempted suicide within the previous one week to four months. As shown in Table 2.5, the participants attributed their attempted suicide to several factors including, perceived accusations of negative behaviour (e.g., "My mother says I steal her money…"), feelings of physical rejection (e.g., "She took my clothing outside, saying that I should go because here in her family I am giving her problems…"), family member HIV positive status (e.g., "…my mother is HIV positive…there is no one who will work for me and my mother, it is me who has to take care of my mother."), death of a close family member (e.g., "After my brother's death I felt lonely and needed someone to talk to since he was the person I was sharing my problems with"), family history of attempted suicide (e.g., "My Aunt did attempt suicide but she survived"), and lack of trusted peer support (e.g., "'I share my problems with my friend,… but sometimes even when I am telling her I don't tell her everything'").

Visual inspection of Table 2.5 generally shows that more associates at the personal level were examined, compared to those related to the family, school, and interpersonal domains. The Table also reveals that regardless of the domain, the associates identified across the reviewed studies appear consistent (or repetitively examined), particularly in the cross-sectional questionnaire-based surveys.

2.3.2.3.2. Evidence on Risk Factors

In line with the risk-factor perspective provided by Kraemer et al. (1997) and Kadzin et al. (1997) adopted for the present review, only one study met the criteria for inclusion as a risk-factor study in this review (i.e., Cluver et al., 2015). Cluver et al. (2015) employed a two-wave, one year apart, longitudinal study design to examine child and adolescent suicidal behaviour and adverse childhood experiences among

adolescents aged 10-18 years in South Africa. The authors assessed the risk factors of attempted suicide through repeated interviews using a structured questionnaire (i.e., the MINI International Psychiatric Interview for children and adolescent suicidality scale) that had a satisfactory reliability score (α = 0.73) for their sample. Final logistic regression modelling of the participants' responses revealed factors and adverse childhood experiences within the personal domain (e.g., being an older adolescent, female gender, being orphaned by AIDS and homicide), family domain (e.g., parental AIDS-illness, domestic violence), and within the interpersonal domain (e.g., sexual, physical, and emotional abuse) which present as risk factors for attempted suicide in young people. Thus far, this study (Cluver et al., 2015) represents the first known prospective study from sub-Saharan Africa that provides evidence on adverse childhood experiences which present as risk factors for attempted suicide in adolescents.

2.3.2.3.3. Age and gender differences in prevalence estimates, associates, and risk factors

The prevalence-studies reviewed reported higher estimates of self-harm among young people between the ages of 15 and 17 years, compared to those aged 14 years and below, and 18 years or above (e.g., Kebede & Ketsela., 1993; Mashego & Madu, 2009; Sommer, 2005). However, the findings of the reviewed studies regarding the associates of self-harm were mixed in terms of age. Whereas some of the reviewed studies found adolescents of younger ages (≤ 14 years) to be at a relatively increased odds of self-harm (e.g., Muula et al., 2013), others found older adolescence rather to be associated with increased odds of self-harm (e.g., Shilubane et a., 2013; Lippi, 2014), and still some studies found no statistically significant relationship between age and self-harm (e.g., Kebede & Ketsela, 1999; Ng et a., 2015; Randall et al., 2014).

Generally, the majority of the included prevalence-studies reported higher estimates among female adolescents than in male adolescents. Twenty-four (58.3%) of the 41 prevalence-studies reported the gender distribution of the prevalence estimates of self-harm. Of the 24 studies, 17 (70.8%) reported higher prevalence estimates among females (e.g., Asante et al., 2017; Flisher et al., 1993; Khuzwayo et al., 2018; Shaikh et al., 2016; Swahn et al., 2012), six studies (25%) found higher prevalence estimates in male adolescents (Amare et al., 2018; Cheng et al., 2014; Kebede & Ketsela, 1993; Lippi, 2014; Madu, & Matla, 2003; Shilubane et al., 2014), whereas one recent cross-national comparative analysis of the Global School-based Health Survey data found mixed prevalence estimates between male and female adolescents (Liu et al., 2018). Liu et al. (2018) found similar 12-month

prevalence of suicide attempt between male and female adolescents in Benin (Female=28%; male=28.2%) and eSwatini (Female=16.2%; male=16.3%), higher 12-month prevalence estimates among males in Malawi (Female=10.7%; male=11.4%), Mauritania (Female=16.6%; male=17.2%), and Namibia (Female=24.2%; male=27.1%), while higher 12-month prevalence estimate was reported among females in Ghana (Female=27.4%; male=25.5%).

Multivariable analyses by the included prevalence-studies to ascertain the associates of self-harm showed mixed findings in terms of age and gender. Whereas one study (Randall et al., 2014) found the male gender to be associated with increased odds of self-harm, the majority of the studies found the female gender to be associated with increased odds of self-harm (e.g., Asante & Meyer-Weitz, 2017; Khuzwayo et al., 2018; Muula et al., 2013; Shiferaw et al., 2006; Shilubane et al., 2013; Wild et al., 2004), and still, some studies did not find gender to have any statistically significant association with self-harm (e.g., Asante et al., 2017; Baiden et al., 2018; Lippi, 2014; Ng et a., 2015; Sommer, 2005; Swahn et al., 2012; van Rooyen, 2013). Also, the majority of the studies did not find any statistically significant association between age and self-harm (e.g., Asante et al., 2017; Baiden et al., 2018; Randall et al., 2014; Shaikh et al., 2016), even though some studies (e.g., Asante, & Meyer-Weitz, 2017; Khuzwayo et al., 2018; Shilubane et al., 2013) found that older adolescent age is significantly associated with self-harm.

The risk-factor study by Cluver et al. (2015) reported a slightly higher 1-month prevalence estimate of self-ham among female adolescents than males at both baseline (female=4.1%; male=2.2%) and follow-up (female=4.5%; male=1.9%). The final risk-factor logistic regression model of the responses found that being an older adolescent (OR=1.17; CI=1.06, 1.28), female gender (OR=1.62; CI=1.05, 2.48), and having adverse childhood experiences (OR=1.16; CI=1.00, 1.35) represent statistically significant risk factors of suicide attempt in adolescents.

Overall, associates of self-harm at the personal level (e.g., depression, hopelessness, psychiatric illness etc.), family level (e.g., conflict with parents, physical and emotional abuse in the family etc.), school-level (e.g., academic failure etc.), and interpersonal level (e.g., breakup, romantic relationship problems, lack of social support etc.) were frequently reported across the studies. Findings on the associations between age and gender, and self-harm were generally mixed across the retained studies. Only one study reported risk factors related to self-harm, while no study reported protective factors against self-harm.

2.3.2.4. Reasons for Self-harm

In this review, the reported reasons for self-harm found in the included studies were categorised into “intrapersonal” (i.e., reasons intended to change one’s state or circumstances), and “interpersonal” (i.e., reasons intended to change the state or circumstances of significant others). Seven (12.3%) of the reviewed studies reported some of the reasons for self-harm in young people. Table 2.7 presents the summary of the key reasons reported across the seven studies. Four of the seven studies were clinic-based (Beekrum et al. 2011; Mhlongo & Peltzer, 1999; Sefa-Dedeh & Canetto, 1992; Wassenaar et al., 1998), while three (Meissner & Bantjes, 2017; Pretorius, 2011; van Rooyen, 2013) were non-clinic based.

2.3.2.4.1. Clinic based studies on reasons for self-harm (n=4)

Three studies (Mhlongo & Peltzer, 1999; Sefa-Dedeh & Canetto, 1992; Wassenaar et al., 1998) reviewed the clinical records of patients who presented with self-harm to ascertain the patients’ reported reasons for the behaviour. In Ghana, Sefa-Dedeh and Canetto (1992) found the intrapersonal reasons for self-harm by a female adolescent patient to be “for self-vindication”, “to regain control over relationships and resources”, and “to die”, whereas the interpersonal reasons reported by the patient were to “get revenge against parents”, “make parents feel guilty”, and “to obtain empathy and understanding from family”. Similarly, Wassenaar et al., (1998) observed an intrapersonal reason “to die”, and an interpersonal reason “to resolve conflict with parents” in the analysis of the clinical records of a 16-year old female patient of self-harm in South Africa. Also, while the reported intrapersonal reason for self-harm by the patients in the study by Mhlongo and Peltzer (1999) was “to die, due to a dreadful disease or mental disturbance” (27%), the interpersonal reason reported was “to demonstrate, usually, against family conflict and abuse” (n=58%). Beekrum et al. (2011) used one-to-one semi-structured interviews to assess the reasons for self-harm among a clinical sample of 10 female adolescent patients aged 14-17 years. Thematic analysis of the interviews showed several intrapersonal, and interpersonal reasons. The intrapersonal reasons were related to the participants’ responses such as, “to stop feelings of hopelessness and despair” (e.g., “I felt…, like, I was just there, like, I had no reason to live”. “I felt worthless, that I’d be better off dead”). The interpersonal reasons covered the participants’ responses such as, “to let others change their behaviour or attitudes” (e.g., “I knew I was not going to die. I just wanted to do something to change my mother’s attitude”; “I hope that my boyfriend hears about it and comes back to me”).

Table 2.7. Reported Reasons for Self-Harm (by year of publication)

Author (year) Country	Term	Setting & Design	Sample			Reported Reasons			Study quality
			Size	Age range	Gender	Intrapersonal Reasons	Interpersonal Reasons	Other	
Sefa-Dedeh & Canetto (1992) Ghana	Attempted suicide	General Hospital. Qualitative clinical case study of clinical records.	2	Case A: 23 years old.	Female (100%)	For self-vindication To regain control over relationships and resources To die	To: Get revenge against parents Make parents feel guilty; Obtain empathy and understanding from family.	–	****
Wassenaar et al. (1998) South Africa	Attempted suicide	General Hospital. Qualitative clinical case study of clinical records.	3	Case 2: 16 years old.	Female (100%)	To die	To resolve conflict with parents.	–	****
Mhlongo & Peltzer (1999) South Africa	Parasuicide	General hospital. Patients' records and interviews with patients presenting with self-harm.	100	15-24years	Female (63%); Male (37%)	To die, due to a dreadful disease or mental disturbance (n=27%).	To demonstrate, usually, against family conflicts and abuse (n=58%)	Uncertain about their reasons (n=15%).	***
Beekrum et al. (2011) South Africa	Non-fatal suicidal behaviour (NFSB)	General hospital. Qualitative case study.	10	14-17years	Female (100%)	To: Stop feelings of hopelessness and despair. Get rid of negative thoughts.	To: Let others (e.g., boyfriend, or parent) change their behaviour or attitudes. To communicate distress related to conflict with parents, parental conflict, high parental expectations, and Peer-cultural conflict. Get parents/family to understand their problems.	–	*****
Pretorius (2011) South Africa	Deliberate self-harm	Children's homes. Mixed methods.	11	12-17years	Female (83.3%; Male (16.7%).	To: Stop bad feelings (n=72.7%); Feel relaxed (n=63.6%); Feel something, even if it was pain (n=63.6%), Punish self (n=45.5%); Get control of a situation (n=45.5%).	To: Receive more attention from your guardians /caregivers/ friends (n=18.2%); Get guardians/caregivers to understand you (n=18.2%); Get help (n=9.1%).	–	***

Table 2.7 (continued)

Author (year) Country	Term	Setting & Design	Sample			Reported Reasons			Study quality
			Size	Age range	Gender	Intrapersonal Reasons	Interpersonal Reasons	Other	
van Rooyen (2013). South Africa	Deliberate self-harm	University. Cross-sectional survey of students.	603	17-49	Female (80.1%) & Male (19.9%)	To: Stop bad feeling Relieve feeling numb or empty Punish yourself Feel relaxed Get control of a situation Feel part of a group Be like someone you respect Avoid having to do something unpleasant you don't want to do	To: Let others know how desperate you were Try to get a reaction from someone, even if it's a negative reaction Receive more attention from your parents or friends Get your parents to understand or notice you Get other people to act differently or change Avoid school, work, or other activities Avoid being with people	–	***
Meissner & Bantjes (2017) South Africa	Attempted suicide	University. One-to-one semi-structured qualitative interviews with students with histories of attempted suicide.	4	20-25	Male (100%) Gay (50%) Heterosexual (50%)	To: Escape feeling trapped Avoid suicide Distract from painful memories Die	To: Make emotional pain visible to others Disconnect from others	–	*****

Note:
Consistent with previous studies (e.g., Scoliers et al., 2009; Tatnell et al., 2014; Taylor et al., 2018; Turner, Chapman & Layden, 2012), the reported reasons were categorised into:

1). **Intrapersonal reasons** (i.e., reasons intended to change one's state or circumstances): reasons or motives relate to desired changes in one's personal or internal state, including changes in sensations, emotional states or thoughts.

2). **Interpersonal reasons** (i.e., reasons intended to change the state or circumstances of significant others): include desired changes within one's social environment, such as communicating distress to someone, or to influence the behaviour of others or to punish others.

2.3.2.4.2. Non-clinic based studies on reasons for self-harm (n=3)

Pretorius (2011) administered the Functional Assessment of Self-Mutilative Behaviors questionnaire (Lloyd, 1997), a checklist of 23 pre-identified motives, to assess the reasons for deliberate self-harm among 11 adolescents in four children's homes in South Africa. Predominantly, the intrapersonal reasons that the participants endorsed were to: "stop bad feelings" (72.7%); "feel relaxed" (63.6%); "to feel something, even if it was pain" (63.6%), "punish self" (45.5%), and "to get control of a situation" (45.5%). The predominant interpersonal reasons that the participants checked for their self-harm were to: "receive more attention from guardians /caregivers/ friends" (n=18.2%), "get guardians/caregivers to understand you" (n=18.2%), and "to get help (n=9.1%).

The Functional Assessment of Self-Mutilative Behaviors questionnaire (Lloyd, 1997) was also used to assess the reasons for self-harm among 603 university students in South Africa (van Rooyen, 2013). As shown in Table 2.7, principal component analysis of the motives checked by the participants revealed several intrapersonal reasons ("stop bad feeling", "relieve feeling numb or empty", "feel relaxed" etc.) and interpersonal reasons ("let others know how desperate you were", "try to get a reaction from someone, even if it's a negative reaction", "avoid being with people" etc.), each of which had a Kaiser-Meyer-Olkin test score between 0.8 and 0.6 (van Rooyen, 2013).

Finally, Meissner & Bantjes (2017) used semi-structured qualitative interviews to assess their participants' reasons for self-harm. The reasons were both intrapersonal (e.g., "… I just wanted to die") and interpersonal (e.g., "I wanted somebody to see my pain. I don't know who. I probably wanted everyone to see, especially all my friends, probably"). The narratives of the participants suggested that the intrapersonal reasons which contributed to their self-harm were mainly triggered by interpersonal distress (Meissner & Bantjes, 2017).

Generally, across the seven studies that reported reasons for self-harm, the participants simultaneously reported or endorsed/checked both intrapersonal and interpersonal reasons for engaging in self-harm. However, it appears the reason, "to die", was frequently reported by the clinical samples, compared to the non-clinic based samples.

2.4. Discussion

2.4.1. Summary of key findings

This systematic review demonstrates that self-harm is a reality in young people within sub-Saharan Africa, although very few studies (n=57), available between January 1950 and December 2018 from less than 30% (13/46) of the countries across the sub-region, met the inclusion criteria for this review.

The reported prevalence estimates showed considerable variations within and across the countries and sub-regions of sub-Saharan Africa. Overall, the median lifetime prevalence estimate was 13.5% (IQR = 7.4% – 16.8%); median 12-month prevalence estimate was 14.3% (IQR: 11.1% – 22.2%); median 6-month prevalence estimate was 18.5% (IQR: 15.3% – 22.3%); and median 1-month prevalence estimate was 6.3% (IQR: 3.1% – 26.4%).

Various methods of self-poisoning and self-injury were reported. However, overdose of medication was frequently reported across clinic-based studies, while self-cutting was the predominant method reported across the non-clinic based studies.

Generally, associates of self-harm at the personal level (e.g., depression, hopelessness, psychiatric illness etc.), family level (e.g., conflict with parents, physical and emotional abuse in the family etc.), school-level (e.g., academic failure etc.), and interpersonal level (e.g., breakup, romantic relationship problems, lack of social support etc.) were frequently reported. Only one study reported risk factors related to self-harm, while no study reported protective factors against self-harm.

Finally, even though studies reporting reasons for adolescent self-harm were sparse in this review, the available evidence reported by both clinic-based and non-clinic based studies suggest that adolescents simultaneously report intrapersonal and interpersonal reasons for enacting self-harm.

2.4.2. Comparable, but Variable Prevalence Estimates

Generally, the prevalence estimates of both suicidal and non-suicidal self-harm among young people in sub-Saharan Africa reported by the reviewed studies are comparable to the prevalence estimates observed among samples of young people in high-income countries (eg., Brunner et al., 2014; Evans et al., 2005; Muehlenkamp et al., 2012; Swannell et al., 2014; Valencia-Agudo et al., 2018). Also, comparatively, the maximum prevalence estimates of non-suicidal self-harm were higher than those of suicidal self-harm – an observation that is consistent with findings from high-income countries (e.g., Sigurdson et al., 2018; Tørmoen et al., 2013; Zubrick et al., 2016). Specifically, across high-income countries,

epidemiological studies have shown that the lifetime prevalence estimates of self-harm in non-clinical adolescent samples vary between 2.8% (Hargus et al., 2009) and 56.4% (Hilt et al., 2008; Swannell et al., 2014); 12-month prevalence estimates range from 1.7% (Larsson & Sund, 2008) to a maximum estimate varying between 36.2% (Hilt et al., 2008) and 67.3% (Calvete, Orue & Sampedro, 2017); 6-month prevalence estimates vary between 1.5% (Moran et al., 2012) and 45.1% (Lundh et al., 2011). However, as high as 60% 12-month prevalence estimate is reported in clinical adolescent samples (Kaess et al., 2013). Additionally, evidence from a cross-national study by Sommer (2005) included in this review, which involved high school students in South Africa and Germany, observed no statistically significant difference in the prevalence estimates of attempted suicide in the German and South African samples. However, given that sub-Saharan Africa is the third most populous region of young people in the world (Population Reference Bureau, 2013; The Commonwealth, 2016), in terms of absolute figures, the prevalence estimates observed in this review implies that potentially more young people in sub-Saharan Africa engage in self-harm, compared to the number of young people who self-harm in high-income countries.

Furthermore, compared to high-income countries (where young people are generally found in schools or within stable households usually with adult supervision), significant proportions of young people have different living arrangements in various settings across sub-Saharan Africa. For example, recent statistics by UNICEF (2016) indicates that, of the world's 59 million children of school-age who are out-of-school, 33 million live in sub-Saharan Africa and about 60% of persons aged 20–24 years within the poorest fifth of the population have had less than four years of classroom education. Many young people in sub-Saharan Africa are 'homeless' or rural poor with broken or non-existing connections with families and schools and are independent from adult supervision – a situation which diverges sharply from the modern (Western) thoughts of 'proper childhood' (Panter-Brick, 2001; Patton et al., 2016; UNICEF, 2006). Some dwell in informal and illegal settlements, sordid slums, and streets of urban areas, engaging in all forms of work (including prostitution, and drug-peddling), whereas others live in deprived rural communities, and still, others stay in refugees' camps, and orphanages surviving on charities (Beegle et al., 2010; Rus, Parris & Stativa, 2017; UNICEF, 2006).

Thus, any epidemiological study aimed at results which are representative of the general population of young people within sub-Saharan Africa or any country within the sub-region must ensure that young people of various living arrangements

are fairly represented. However, available evidence shows that this is not the case: although homeless and rural poor young people are publicly visible, they are usually underrepresented or not represented at all in epidemiological studies, compared to their counterparts drawn from schools and stable households (Chen et al., 2014; Bemak, 1996; Swahn et al., 2012; Yoder, 1999). Granted, most of the prevalence estimates provided by the majority of the studies in this review, at best, can be applied to only young people in schools and within stable households, and at worst, non-representative of the general populations of young people in sub-Saharan Africa.

This review attempts to compare the reported prevalence estimates at the sub-regional level and at the broader sub-Saharan African regional level by means of forest plots and computation of medians with interquartile ranges (Figures 2.2 – 2.6). However, regardless of the level of analysis and prevalence period, the observed heterogeneity was statistically significant, with wider interquartile ranges; hence the variability could not be due to chance. Undoubtedly, real, possible variations could exist across and within sub-regions and countries in sub-Saharan Africa in terms of the prevalence of self-harm in young people, however, the factors which could account for the significant variations in the prevalence estimates as observed in this review, are not entirely readily clear due, mainly, to the small number of available studies. Plausibly, a few observations made in this review could help provide some explanations. The first plausible explanation has to do with the origin and contextual relevance of the measures used by some of the included studies. It was observed in this review that some studies made use of assessments tools originally developed for use in Western contexts, but these studies failed to assess the contextual validity of these measures before use. This potentially could have implications for the results of the study, including reported prevalence estimates, as in most cases the socio-cultural sensitivity (including language), adequacy, depth, relevance, and psychometric validation of these measures differ significantly from the African situation (Hjelmeland et al., 2006; Mutumba, Tomlinson & Tsai, 2014; Opoku, 2012; Schlebusch et al., 2009; Stevanovic et al., 2017). The application of Western instruments to the screening and studying of African-specific issues has been found to be a real problem in Africa and as such there has been a recent call for the construction and application of African-centred measures for research and clinical assessments of health and behavioural issues in Africa, including child and adolescent mental health in sub-Saharan Africa (Abubakar & van de Vijver, 2017; Atilola, 2015; Mutumba et al., 2014; Owen et al., 2016; Opoku, 2012; Schlebusch et al., 2009; Stevanovic et al., 2017).

Also, the volume of items on the measures used could account for some variations in the results observed. The majority of the prevalence studies in this review made use of single-item measures, usually, requiring ‘yes’ or ‘no’ response. Relative to multi-item measures, the use of single-item measures tends to yield lower prevalence rates (Madge et al., 2008; Muehlenkamp et al., 2012). Single-item measures tend to yield results usually fraught with self-evaluative biases and socially desirable responses from participants (Hom, Joiner Jr, & Bernert, 2016; Millner, Lee & Nock, 2015; Robins, Hendin & Trzesniewski, 2001; Wynder, 1994). Specifically, single-item measures used in clinical assessment or research, without follow-up questions, lead to self-harm misclassification (Hom et al., 2016).

In terms of the assessment questions used, it is observed in this review that the included studies used various terminologies to compose specific questions asking directly about self-harm. For example, virtually all the included prevalence-studies made use of single-item measures (with Yes/No response format) to assess self-harm, for example, “have you actually tried to commit suicide?” “have you ever attempted suicide?” (Appendix 2.15). Apart from many of these questions containing stigmatising and pejorative terms, for example, “commit”, “deliberately”, among others (Anderson et al., 2004; Beaton et al., 2013; Hasking et al., 2017; Nielsen et al., 2016; Pryjmachuk & Trainor, 2010; Silverman & De Leo, 2016), available evidence shows that most young people, including those who self-harm, do not even understand “self-harm” or “suicide”, whilst others are reluctant to talk about it (Klineberg et al., 2013; Mishara, 1999; Nock, 2012). Hence, the critical question to ask is, what does, for example, “have you ever attempted suicide?”, or “have you ever tried to hurt yourself?” mean to a young person in a research or clinical screening context? The young person’s conceptualisation, interpretation, and understanding of these and similar (single) questions is imperative, as this has direct implications for the young person’s responses. Unfortunately, regarding research on, and clinical screening for self-harm (in both young, and old samples), even in high-income countries, “no study has been published to date that helps us to understand the connotations of these terms in our patients’ minds, to determine the meaning of their responses if either in the affirmative or negative” (Berman & Silverman, 2017, p. 214). Finally, given the strong sensitivity, stigma, and taboo against suicide and other self-destructive behaviours in Africa (Hjelmeland et al., 2008; Ikuenobe, 2017; Osafo et al., 2011), and the fact that, in epidemiological studies (on sensitive issues), participants tend to provide responses that dissociate them from the guilt feeling of being the cause of their own health problems (Krumpal, 2013; Tourangeau & Yan, 2007; Wynder, 1994), the position of this

review is that, the variations in the prevalence estimates of self-harm in young people within sub-Saharan Africa countries reported by the included studies could be attributed partly to participants' misconstruction of assessment questions and self-evaluative biases.

Another plausible explanation relates to the sample frame, sampling strategies, sample representativeness and the study settings covered by the included studies. The majority (77.2%) of the included studies that reported prevalence estimates of self-harm were conducted within urban contexts, mainly, educational institutions (schools and universities), with sample sizes varying between 142 and 10,997 participants. The representativeness and typicality of these samples relative to their respective general populations of young people were difficult to assess in this review, as most of the studies did not provide any information regarding the general population of the young people studied. Whereas some studies (47.4%) employed some form of random selection strategies, other studies use non-probability strategies (40.4%) in recruiting their participants. These sample and sampling variabilities could be accountable for the wider confidence intervals and (extreme) outlier prevalence estimates reported by some of the retained studies in this review.

2.4.3. Methods of Self-Harm

Based on the adopted definition of "self-harm" for this review (NICE, 2012), the major methods of self-harm were categorised into self-poisoning and self-injury. Although both self-poisoning and self-injury were reported as the major methods of self-harm, predominantly, self-poisoning (particularly, overdose of medication) was frequently reported across the included clinic-based studies. However, across the non-clinic based studies, self-injury (particularly, cutting) was predominant. Further evidence is needed here, especially, from non-clinic based studies to help assess the differences and similarities between males and females on the choice of method of self-harm among young people in sub-Saharan Africa (e.g., availability, access, meaning and reasoning for methd choice). Despite this need, the available limited evidence identified by this review is consistent with what exists in high-income countries, where self-poisoning (overdose) is frequently reported by clinical samples, whereas self-injury (cutting) is frequently reported by non-clinical samples of young people (Beckman et al., 2018; Chartrand et al., 2016; Laukkanen et al., 2009; Madge et al., 2008; Robinson, 2017; Rodham, Hawton & Evans, 2004).

2.4.4. Associates, Risks, and Protective Factors

This review found more studies (n=34; 59.6%) that reported on the associates of self-harm; only one study (1.8%) reported evidence on the risk factors associated with self-harm, whereas no study reported on the protective factors related to self-harm. To meaningfully synthesise the various associates, and risk factors found by the included studies, this review organises the evidence using a multi-layered approach: personal, family, school, and interpersonal level associates, and risk factors.

Associates: Generally, the included studies found multiple factors to be associated with self-harm at the personal level (e.g., gender, age, depression, hopelessness, psychiatric illness, alcohol and illicit drug use, etc.), family level (e.g., conflict with parents, physical and emotional abuse in the family etc.), school-level (e.g., academic failure, bullying victimisation, truancy etc.), and interpersonal level (e.g., breakup, sexual and physical abuse, romantic relationship problems, social support etc.).

Risk factors: The risk-factor study reviewed (Cluver et al., 2015) also showed factors related to self-harm as risks within the personal domain (e.g., being an older adolescent, female gender, being orphaned by AIDS and homicide), family domain (e.g., parental AIDS-illness, domestic violence), and at the interpersonal level (e.g., sexual, physical, and emotional abuse).

Visual inspection of Table 2.4 shows that, across the associate and risk-factor studies reviewed, factors at the personal level were frequently assessed, followed by factors at the family level, then interpersonal level, and school level. This could be due to the use of researcher pre-identified lists or checklists of risks, and psychological/psychiatric diagnostic tools by the reviewed studies. Often, these measures of risk factors tend to have more items on personal-level factors, compared to the number of associates or potential risk factors related to the family, school, and the general socio-cultural contexts within which young people live. This observation is not surprising, as there is evidence to suggest that often researchers tend to view self-harm as an individual problem, rather than as a public health challenge associated with environmental, economic, and socio-cultural factors (Hawton, Harriss, Simkin, Bale & Bond, 2001; White et al., 2016).

Although further research evidence is needed to expand the associate, risk-protective factor base, the associates and risk factors identified by the studies in this review are consistent with evidence from high-income countries (e.g., De Riggi et al., 2017; Doyle, Treacy & Sheridan, 2015; Fortune et al., 2016; Fox et al., 2015;

Klassen et al., 2017; Madjar et a., 2017; Muehlenkamp et al., 2013; Valencia-Agudo et al., 2018). In the cross-national study involving samples of high school students in Germany and South Africa, Sommer (2005) found that, female gender, previous psychiatric contact, attempted suicide in the family, and friend's death were significant associates of attempted suicide in both the German and South African samples.

However, relative to high-income countries, the associates and the factors which present as risks for self-harm in young people are likely to be more frequent in sub-Saharan Africa. This is to be expected, given that these challenging factors are commoner in the sub-region: poverty and unemployment, death of parents (to AIDS), physical and sexual abuses – including (forced) child marriage – displacement by wars and conflicts, school problems, substance use and drug abuse, psychiatric and psychological problems, family conflict, among others (e.g., Adjei & Saewyc, 2017; Atilola et al., 2013; Hounmenou & Her, 2017; Kabiru et al., 2013; Kithakye et al., 2010; Lalor, 2004; Lund et al., 2010; Patton et al., 2016; Meinck et al., 2015; Song & Shaheen, 2013; Tomlinson et al., 2007).

Furthermore, the variations in the prevalence estimates (even within the same country) found in this review may indicate that even though young people within sub-Saharan Africa generally face numerous challenges which (could) put them at risk of self-harm, these young people may be responding differently to these challenges and negative environmental circumstances. Perhaps, the young people who report lower prevalence estimates of self-harm (e.g., Kinyanda et al., 2011) have developed certain adaptive skills and resilience amidst the harsh realities of their living circumstances, whereas those who report higher prevalence estimates of self-harm (e.g., Lippi, 2014) might have not developed any such adaptive strengths, even though both groups of young people face the same or similar negative life circumstances. This point remains only a tentative speculation until supported by future research evidence from the sub-region. But more importantly, the variations in the prevalence estimates within and across the countries and sub-regions observed in this review could be due more to the significant variations in the sample sizes, sampling techniques, and the source of the samples (e.g., school, streets, or households).

Thus far, a considerable evidence base has been established on depression (including loneliness and hopelessness), anxiety, and other negative personal-level factors as associates and risks for self-harm behaviours and other adverse mental health outcomes in young people across sub-Saharan Africa (e.g., Atilola et al., 2013; Cortina et al., 2012, 2013; Hecker et al., 2014; Mutumba et al., 2014; Randall

et al., 2014; Shilubane et al., 2013; Taylor et al., 2016; Wild et al., 2004, etc.). However, more evidence is still needed to understand the risks for self-harm related to the family, school, and the general community and environmental contexts, adverse life experiences, interpersonal and peer relationship dynamics, and the general socio-cultural contexts in which the various groups of young people across sub-Saharan Africa live (Kabiru et al., 2013).

The multi-level nature and plurality of the associate and risk-factor evidence further indicates that child and youth mental health risks, particularly, in (sub-Saharan) Africa are diverse and go beyond various levels of the family care environment (Abubakar & van de Vijver, 2017; Atilola, 2014, 2017). This makes appropriate the application of multi-layered theoretical models, for example, the ecological model, to the study of self-harm in young people in sub-Saharan Africa, as such models provide a relatively holistic and broad framework within which self-harm can be understood and recommendations made for prevention and intervention efforts (Ayyash-Abdo, 2002; Henry et al., 1993; Kidd et al., 2006; Perkins & Hartless, 2002).

Besides the lack of evidence on the protective-factors against self-harm, generally, the studies reviewed reported evidence on the associates of self-harm in young people in schools and in clinical context, with limited evidence on young people within out-of-school contexts, for example, street-connected children and youth or homeless youth, rural-dwelling young people, young people living in war-affected communities, among others. Hence, more evidence is needed, particularly on risk and protective factors, in order to understand the extent of the problem and the various personal resources (e.g., effective problem-solving skills, resilience etc.) and social resources (e.g., family and peer support, etc.), which could potentially help to reduce the risk for self-harm in young people in countries across sub-Saharan Africa.

Finally, beyond these methodological and contextual explanations, the reported associates and risk factors of self-harm could also be understood in terms of human development. During adolescence, young people (particularly, those who attend school) live with their families, often, under the guardianship, supervision and support of their parents, and relationships with parents, siblings and other family members remain important for the well-being and development of adolescents (e.g., Sawyer et al., 2018; Steinberg & Morris, 2001). In this vein, family related events and factors can have direct implications for the onset and maintenance of self-harm in adolescents (e.g., Tatnell et al., 2014; Valencia-Agudo et al., 2018). Also, adolescence is often considered a period in the life course when

peer relationships and influence of peer groups become more important than the family context; the adolescent spends more time with peers, usually with reduced adult supervision, and they place greater premium on the opinions and expectations of their friends (Brown & Larson, 2009; Steinberg & Morris, 2001). Available evidence shows that peer climates (of victimisation or acceptance) have an influence on self-harm during adolescence (e.g., Madjar et al., 2017a, 2017b; Valencia-Agudo et al., 2018). Also, going to school, having satisfactory school performance, and obeying school norms and rules are important developmental tasks during adolescence, with parents and teachers having their expectations about the engagement and performance of the adolescent in school (e.g., Ansong et al., 2017; Elmore, 2009). As such, in-school adolescents who experience poor, non-supportive school climates, and poor academic performance are more likely to self-harm (e.g., Madjar et al., 2017a, 2017b; Valencia-Agudo et al., 2018). Personal level factors (e.g., self-esteem) and interpersonal relationship difficulties (e.g., breakups) can be particularly problematic for adolescents (e.g., Slotter, Gardner & Finkel, 2009) and these have also been found to be important factors influencing the onset and repetition of self-harm in adolescents (Tatnell et al., 2014; Valencia-Agudo et al., 2018).

2.4.5. Age and gender differences in risk and protective factors

This review has found that relatively, higher prevalence estimates of self-harm are reported among young people aged 15 – 17 years; in terms of gender, higher prevalence rates are reported among females than males. These findings are consistent with the literature from high-income countries (e.g., Bresin & Schoenleber, 2015; Carli et al., 2014; Moran et al., 2012; Plener et al., 2015; Rodham et al., 2004; Victor et al., 2018). Although further evidence and new research (especially, longitudinal studies) are needed to understand these age and gender differences, generally, in LAMICs, the disproportionately higher prevalence estimates of self-harm in adolescent females than their male counterparts have been attributed to the entrenched and exploitative normative gender role discrimination often against women and girls (Petroni, Patel & Patton, 2015). Compared to young males, many young females tend to be victims of more domestic chore burdens, overwhelming caretaking responsibilities, sexual abuse and exploitation, exclusion from education, unemployment, and exclusion from decision making (Petroni et al., 2015). Thus, these rigid gender norms and discrimination, coupled with the natural increased risk of depressive disorders during puberty (Patel, 2013), elevates the vulnerability to self-harming behaviours and adverse mental health outcomes in young females (Petroni et al., 2015).

Findings from the qualitative studies included in the present review support this evidence of entrenched cultural and family rules of comportment and norms of obedience and respect by young people and the sense of powerlessness experienced by both boys and girls as linked to self-harm (Beekrum et al., 2011; Meissner & Bantjes, 2017; Sefa-Dedeh & Canetto, 1992; Shilubane et al., 2012; Wassenaar et al., 1998).

Similarly, the finding in this review that the evidence from the reviewed studies are mixed regarding gender and age as associates of self-harm in young people in sub-Saharan Africa supports the observation in high-income countries that the evidence on gender and age as associates of self-harm in young people is mixed (e.g., Heath et al., 2009; Sornberger et al., 2012). This review considers the mixed nature of the findings regarding age and gender as associates of self-harm to be related to the influence of the varying ages of the participants, the sample sizes, and the different sources of the samples (e.g., clinical, community, schools etc.) involved in the included studies.

The only risk-factor study in this review (Cluver et al., 2015) shows female gender and older adolescence as risk factors for self-harm. Nonetheless, as evidence from a single study, this is insufficient to provide a stronger basis to draw clear conclusions in terms of age and gender as risk factors for self-harm in young people in sub-Saharan Africa.

Finally, it is important to point out that the associates of self-harm reported by the included studies must be considered with caution due to two analytical reasons. First, in developing the logistic regression models to ascertain the associates of self-harm, most of the included studies used the bivariate test of association technique to screen and select candidate factors to be included in the final multivariable models. Although there is no overall consensus in the literature regarding the best approach for selecting factors to be included in multivariable models, the use of bivariate tests of significant association is not recommended, particularly, in building logistic models (Babyak, 2004; Harrell et al., 1996; Steyerberg et al., 2018; Sun et al., 1996). In bivariate tests of significant association technique, factors which show statistically significant association with the outcome variable are included in the multivariable model, while those without statistically significant association with the outcome variable are excluded. This approach is not recommended because it cannot adequately control for potential confounding; it may lead to the exclusion or inclusion of inappropriate factors in the final multivariable model, hence it potentially introduces significant error in the final multivariable model (Babyak, 2004; Harrell et al., 1996; Steyerberg et al., 2018; Sun

et al., 1996). The second analytical reason is related to how missing data were handled in the included associate-studies. Missing data are a common challenge in cross-sectional surveys and field experiments, and have implications for research conclusions if not properly addressed during data analysis (Allison, 2002; Cox, McIntosh, Reason & Terenzini, 2014; Graham, 2012). Although some studies reported the presence of missing data and how they were handled, for example, by using a multiple imputation method (e.g., Asante et al., 2017; Randall et al., 2014), the majority of the included associate-studies either did not indicate the extent of missing data or (where reported) did not report how they were addressed. This is problematic because there are many comprehensive guidelines regarding how to report research, many of which are open access, published before most of the associate-studies cluded in this review were conducted and published [e.g., the STROBE Statement: Strengthening the Reporting of Observational Studies in Epidemiology (Vandenbroucke et al., 2007)].

2.4.6. Reasons for Self-harm

The evidence on young people's reported reasons for self-harm found in this review was drawn from six studies: four involved clinical samples and two were conducted in non-clinic contexts, mostly in South Africa. The reported reasons cover both intrapersonal and interpersonal motives. The intrapersonal reasons were targeted at dealing with personal distress or to "stop bad feelings", whereas the interpersonal reasons were meant to exert interpersonal influence on significant others, for example, "to make someone a boy/girlfriend, or parents change their mind". This observation seems consistent with the "cry for help" (interpersonal), and "cry of pain" (intrapersonal) reasons for self-harm reported by young people in high-income countries (Scoliers et al., 2009). More specifically, evidence from recent non-clinic based studies in high-income countries have shown that, the intrapersonal motive, "to get relief from a terrible state of mind", is the most commonly endorsed reason by adolescents who self-harm (e.g., Barreto Carvalho et al., 2017; Doyle, Sheridan & Treacy, 2017; Kelada et al., 2018; Kiekens et al., 2017; O'Connor, Rasmussen & Hawton, 2014; Rasmussen et al., 2016). To a large extent, therefore, self-harm may serve to regulate and relieve distressing emotional states, hence, may potentially function as an automatic positive reinforcement in adolescents who enact the behaviour, particularly, for those who repeat the behaviour (Doyle et al., 2017; Kelada et al., 2018).

Additionally, regardless of the form of self-harm engaged in (i.e., self-injury, or self-poisoning), or the context of the study (i.e., clinical, or non-clinical), each participant reported multiple reasons, usually, a combination of both intrapersonal,

and interpersonal reasons. It is also interesting to note that, in some of reviewed studies, the young people reported suicidal reasons, even though they adopted, relatively, “less lethal” methods for the behaviour (e.g., scratching, wrist cutting etc.), while in other studies (particularly, those involving clinical samples) non-suicidal reasons were reported, even though the behaviour was carried out using, relatively, “more lethal” means (e.g., overdose, or poisoning etc.). Even though this observation cannot be totally dismissed as an artefact of the data collection methods and measurement strategies used by the reviewed studies, it highlights the difficulty in assessing the relationship among the method, lethality, and intention of self-harm (Ougrin et al., 2010; Silverman, 2016).

However, this review suggests that more evidence (particularly, from non-clinical samples) is needed from sub-Saharan Africa to help us understand and evaluate the specific reasons for self-harm in young people, as having insights into some of the key reasons for self-harm is critical to understanding the behaviour and designing intervention and prevention programs (Hawton et al., 2012). Future studies, using pre-identified reasons to be endorsed by participants, may consider including open-ended questions on “other reasons”, to allow participants to indicate other reasons they may have, which may not be part of those pre-identified by the researcher or the questionnaire.

2.4.7. Difference between in-school and out-of-school young people

Generally, not only did a relatively limited number of studies involving young people in out-of-school contexts (e.g., homeless, rural-dwelling, and street-connected children and youth, etc.) meet the criteria for inclusion in this review, but generally, young people in out-of-school contexts were under-represented in the included studies. Therefore, no clear and firm evidence was identified in this review to suggest that young people in out-of-school contexts differed systematically from those in schools and with stable families and homes, in terms of the prevalence estimates, methods, risks, protective factors, and the reasons for self-harm. More research evidence is needed in this area, as the life situation of this under-represented population of young people is significantly different from those in schools and with stable families (Cheng et al., 2014; Kidd, 2012; Yoder, 1999).

2.4.8. Burgeoning research on adolescent self-harm

Earlier and recent global reviews on self-harm in young people have generally identified sparse or no studies from Africa or sub-Saharan Africa (e.g., Glenn et al., 2019; Valencia-Agudo et al., 2018; Fox et al., 2015; Jacobson & Gould, 2007; Muehlenkamp et al., 2012; Swannell et al., 2014). Similarly, recent regional reviews

covering LAMICs – including African countries – with focus on self-harm, suicide, and mental health problems in young people (and even adults) have yielded fewer search hits (e.g., Aggarwal et al., 2017; Cortina et al., 2012; Mars et al., 2014; Yatham et al., 2018). The most recent review on “youth self-harm in low-and middle-income countries” (Aggarwal et al., 2017) found a total of 27 studies of which only two were identified from sub-Saharan Africa. Also, an earlier review that attempted to estimate the prevalence of mental health problems in children and adolescents in sub-Saharan Africa found a total of 11 studies conducted in only six countries within the sub-region (Cortina et al., 2012).

Although young people represent about 32% of the population of sub-Saharan Africa (Population Reference Bureau, 2013) and are mostly affected by a wide range of problems and unmet needs, research into their general health and well-being, paradoxically, is limited, with their mental health issues remaining largely under-researched (Fisher et al., 2011; Kabiru et al., 2013; Omigbodun & Belfer, 2016; Owen et al., 2016; Patton et al., 2016; Rohde, 2011). There are still countries in Africa and other LAMICs that do not have a single publication in the area of child and adolescent mental health (Kieling & Rohde, 2012; Omigbodun & Belfer, 2016). According to Aggarwal and Berk (2015, p.1), self-harm has generated a lot of research, intervention, and prevention interests in high-income countries, owing to its complex nature; however, the phenomenon “is a neglected entity in LAMICs”.

Plausibly, the paucity of research on self-harm in young people in sub-Saharan could be attributed to the same factors which are generally adduced to explain the lack of systematic data collection, and good-quality research on deaths by suicide across the African continent. Research efforts on suicide in Africa have been limited for decades by many factors including but not limited to the following: the political and socio-economic instability that characterise many parts of the continent, lack of research funds and infrastructure, unavailability of professionals, including suicidologists, and research experts (who are originally Africans), limited and out-of-date studies, research designs and assessment measures/instruments fraught with poor scientific rigour, with most studies being descriptive in form, limited reliable death registers and suicide autopsy reports, lack of self-harm and suicide surveillance information systems and data registry, and insufficient inter-African collaborative research (Kinyanda & Kigozi, 2005; Lester, 2011; Mars et al., 2014; Omigbodun & Belfer, 2016; Schlebusch, Burrows & Vawda, 2009). According to the WHO (2014a), only three countries in Africa have a national strategy under development aimed at the prevention of suicide, but no country throughout Africa

has an existing national strategy or action plan for the prevention of suicide – compared to 13 countries within the European region.

Beyond the foregoing challenges related to paucity of studies on adolescent self-harm in sub-Saharan Africa, it can be observed that compared to the previous decades (1950-2009), most of the studies in this review (n=35; 61.4%) were conducted within the past nine years (2010-2018) [Appendices 2.11 – 2.12 present this evidence graphically]. This may be an evidence suggesting that research interest in self-harm among young people within countries across sub-Saharan Africa is now beginning to form and showing steady growth. Two reasons may account for this recent seeming upsurge of interest in research on self-harm among adolescents in the sub-region. First, besides the current heightened global (research) interest in issues related to self-harm and suicide, and child and adolescent mental health (e.g., Kieling et al., 2011; Patel et al., 2018; Patton et al., 2016; Sustainable Development Solutions Network, 2018; WHO, 2014a), recently, mental health professionals and researchers in sub-Saharan Africa have observed that a wide research and treatment gap in terms of issues related to child and adolescent mental health within the sub-region still exists, and thus the need to direct research attention onto child and adolescent mental health in the sub-region is urgently warranted (e.g., Atilola, 2017; Cortina et al., 2012; Getanda, Vostanis, & O'reilly, 2017; Kabiru et al., 2013; Omigbodun, & Belfer, 2016; Owen, Baig, Abbo, & Baheretibeb, 2016; Sharan et al., 2011; Vostanis, Maltby, Duncan, & O'Reilly, 2018).

Two recent national youth behaviour survey initiatives can also be identified as the other factor responsible for the recent increase in research on adolescent self-harm in sub-Saharan Africa: the Global School-based Student Health Survey (GSHS) and the South African National Youth Risk Behaviour Survey (SANYRBS). The GSHS is a collaborative surveillance project designed by the WHO, UNICEF, UNESCO, and UNAIDS, with technical support from the Centers for Disease Control and Prevention, USA (CDC, 2018; WHO, 2018). GSHS has been in existence since 2003, with the aim of helping participating countries measure and assess the behavioural risk and protective factors among young people aged 13 to 17 years. Currently, the participating countries include 21 sub-Saharan African countries (WHO, 2018). The SANYRBS, possibly, remains the only national youth risk behaviour survey undertaken periodically in a country on the continent of Africa. The survey began in 2002 to, among other things, estimate the prevalence of behaviours related to mental health (suicide related behaviours and substance use), infectious diseases (sexual behaviour and hygiene), and chronic diseases

(Reddy et al., 2003, 2010, 2013) among school-going adolescents across all provinces in South Africa.

These periodic youth behaviour surveys (i.e. GSHS and SANYRBS) provide publicly available and accessible data which inform national and cross-national peer-reviewed publications, and intervention and prevention programmes in relevant countries. In the present review, seven studies (12.3%), including one cross-national analysis, were based on data from the GSHS (Asante et al., 2017; Baiden et al., 2018; Liu et al., 2018; Muula et al., 2013; Nyandindi, 2017; Randal et al., 2014; Shaikh et al., 2016), while two studies (3.5%) were informed by data from the SANYRBS (James et al., 2017; Shilubane et al., 2013).

2.4.9. Strengths and Limitations

To the best of the primary researcher's knowledge, the present review represents the first effort at providing a systematic synthesis of the available research evidence on the phenomenon of self-harm in young people within countries in sub-Saharan Africa. However, the conclusions drawn by this review must be considered with caution due to, firstly, some limitations common to the reviewed studies, and secondly, method-related limitations associated with the conduct of this review.

It is noteworthy that the time lag between the self-harm behaviours and the conduct of the studies varied across the included studies. Thus, many of the participants' responses, particularly, those related to questions about prevalence estimates and reasons for self-harm, might have been limited by recall bias or influenced by some environmental and social factors, such as, peer-support, help-seeking, or sympathetic responses from family, among others.

Of the 46 countries within sub-Saharan Africa considered for this review, studies included in this review came from only 13 countries, of which the majority (61.4%, n=35) came from South Africa alone. Although countries within sub-Saharan Africa share more cultural, geographical, political, and economic similarities than differences (e.g., Gyekye, 2003), it is a well-known fact that, for example, the associates, risks and protective factors and their relative importance found in self-harm research are different across various populations and regions (Mars et al., 2014). The implication is that, conclusions drawn by this review may not necessarily be generalisable to other countries within sub-Saharan Africa, particularly, those without any research evidence yet on self-harm in their young populations.

Another observation worth pointing out is related to the surprisingly high response rates (varying between 86% and 93%) reported by the reviewed studies

on the prevalence of self-harm. Generally, cross-sectional studies from sub-Saharan Africa involving students seem to report high response rates (e.g., McKinnon et al., 2016). However, the concern this review raises is whether these high response rates are indicative of a 'captive participant' phenomenon (Ferguson, Yonge & Myrick, 2004), where researchers are given the assurance by parents or caregivers/guardians, or the authorities of participating schools that every student wants to participate, without the solicited express consent of the students or wards themselves (Cherry, 2017; Farrimond, 2017; Felzmann, 2009; Iltis, 2013). This concern is based on the fact that, generally in Africa, young people are taught and exhorted to be submissive and "to be obedient to their parents and to respect their elders, and thereby, win their goodwill and appreciation" (Gyekye, 2003, p.86). This review considers this African moral value as a factor which potentially widens the (adult) researcher – (child) participant power asymmetry, and therefore can compel students or young people to participate in research, regardless of their consent or willingness to do so. Recent evidence shows that, in Africa, children and adolescents without mental health challenges and disability have the capacity to consent to research participation (Pillay & Singh, 2018). However, the question as to whether these young people are actually invited to expressly and independently consent to participate in research remains largely unanswered.

Additionally, although these high response rates added to the broader strengths of the reviewed studies, they did not necessarily reflect reductions in the biases related to non-response errors, socially desirable responses, errors in recall, among others. These biases are plausible, given that self-harming behaviours are highly stigmatised (and attempted suicide is particularly criminalised in most countries) across Africa (Mars et al., 2014; Mishara & Weisstub, 2016). As shown by the quality assessment ratings in this review, most of the reviewed studies did not report on how they addressed these biases.

Generally, the limitations associated with the methodological quality of this review were assessed in the light of the AMSTAR – A MeaSurement Tool to Assess systematic Reviews (Shea et al., 2007). The inclusion of available grey literature (e.g., postgraduate theses, collection of potentially relevant [unpublished] records from authors etc.) in addition to the inclusion of peer-reviewed studies published in indexed academic journals helped to reduce potential publication bias (if any) in the conclusions drawn by this review. However, as observed elsewhere (e.g., Hopewell, McDonald, Clarke, & Egger, 2007; McAuley, Tugwell, & Moher, 2000; Shea et al., 2007) and shown in the results of this review (see Figures 2.2 – 2.5), even though the included peer-reviewed articles yielded some variations in the

reported prevalence estimates of self-harm, some of the grey literature yielded ‘elevated’ prevalence estimates of self-harm (e.g., Lippi, 2014; van Rooyen, 2013) and were generally between ‘average’ and ‘above average’ on methodological quality scores (e.g., see Lippi, 2014; Pretorius, 2011; Sommer, 2005).

It is worth mentioning that beyond plausible differences in the criteria for inclusion and exclusion of studies for both the previous and the present reviews, the present review has one notable strength over the previous global and regional reviews on self-harm in young people. The present review adopts a comprehensive search process in that it included searching of global academic databases (i.e., MEDLINE, PsycINFO, and PubMed), African regional academic databases (i.e., African Journals Online, and the African Index Medicus), hand searching, reference harvesting, and the inclusion of grey literature (searching of post-graduate theses portals, contact with authors, Google Scholar and Google search, etc.). Of the 57 studies included in this review, 12 (21.1%) were peer-reviewed articles exclusively indexed in the African regional academic databases searched, hence they were not available in any of the global databases searched. Taken in isolation, these 12 papers represent a higher number of hits, relative to the total number of studies obtained by previous global and regional reviews covering sub-Saharan Africa (e.g., Aggarwal et al., 2017; Cortina et al., 2012; Muehlenkamp et al., 2012; Swannell et al., 2014). The most plausible reason for this disparity in hits of peer-reviewed articles from sub-Saharan Africa is that, unlike the present review, the previous global and regional reviews limited their searches for eligible records to only international, global databases, to the exclusion of African-based regional academic databases and journals. As acknowledged earlier, although generally there is a low level of scholarly publications from the African continent, significant scholarly works from Africa and African-based journals are often not visible in international academic databases (Chuang et al., 2011; Hofman et al., 2009; Nwagwu, 2016; Rotich, 2011; Saxena et al., 2006; Smart, 2005; Tijssen, 2007). Thus, a global or regional review mainly or partly focused on the African context, but with searches restricted to only international databases, misses identifying potentially eligible records published in journals indexed in databases that are African-based (Mars et al., 2014; Shenderovich et al., 2016). All the titles and full text of potentially eligible studies received from the authors contacted were also available from the systematic search of the global and regional databases conducted, hence were eliminated as duplicates (Figure 2.1).

However, the literature search for this review was limited to records in English, thereby excluding records in languages used in sub-Saharan Africa other

than English (e.g., Afrikaans, Arabic, French, Kiswahili, Kikongo, Portuguese etc.), which could potentially provide useful information on self-harm in young people across some sub-Saharan African countries (Grégoire, Derderian, & Le Lorier, 1995; Moher, Pham, Lawson, & Klassen, 2003; Rasmussen, & Montgomery, 2018; Wang et al., 2015). It must be acknowledged though that, potential biases (if any) that could be associated with this language restriction are expected to be minimal as most health, social and biomedical sciences publications (between 90% and 97%) from Africa are in English (Mêgnigbêto, 2013; Nwagwu, 2017; Pouris, & Ho, 2014). Practically, this language restriction was also necessitated by insufficient resources and limited time available for translation of accessible potentially eligible non-English records. As recommended elsewhere (Wang et al., 2015), the author contacts made to obtain papers from the personal records of researchers and more importantly for clarification of key missing information (e.g., prevalence periods etc.) in some accessed eligible papers (e.g., Asante & Meyer-Weitz, 2017; Stansfeld et al., 2017; Vawda, 2012) contributes to the strength of this review.

Furthermore, the AMSTAR (Shea et al., 2007) recommends that there should be at least two independent data extractors. However, the data extraction for this review was performed by the primary researcher only, with strict reference to the predetermined criteria for inclusion and exclusion agreed upon with the supervisory team. The primary researcher presented all extracted results at supervisory meetings for consensus building. Guided by the predetermined criteria for inclusion and exclusion, the primary researcher and the supervisory team built consensus with regard to the extracted studies excluded, and for about 10% – 20% accuracy check regarding the extracted studies in this review. Furthermore, the primary author acknowledges that he was part of the team of researchers who authored one of the included papers in this review (Asante et al., 2017). Even though the paper was subjected to the same critical appraisal standards applied in this review, the primary author recognises the limitations related to self-review.

More importantly, the multi-level categorisation of the factors associated with self-harm into personal, family, school, interpersonal level factors by this review was motivated by the wider variations and the general lack of meaningful classification of these factors across the retained studies. The same motivation informed the dichotomous categorisation of the reported reasons for self-harm into intrapersonal and interpersonal reasons. Generally, these categorisations provided a more pragmatic way of understanding the reported associated factors and the reasons for adolescent self-harm. Notably, however, some challenges can be associated with these categorisations as applied in the present review. In terms of

the factors associated with self-harm, there could be significant inherent overlaps between, for example, personal level factors (e.g., anxiety, depression, drug use) and family level factors (e.g., intra-familial sexual abuse, parental mental disorder, physical punishment) – family factors could be influencing the onset of the personal level factors and vice-versa; or overlap among personal (e.g., anxiety, “to regain control over relationships and resources”), school (e.g., exam failure) and interpersonal level factors (e.g., bullying victimisation). Again, depending on certain demographic characteristics (e.g., age, gender) some associated factors can be more present or absent or remain static or dynamic over time. In other words, the definitions and conceptualisations of these categories fail to provide clear, independent, mutually exclusive distinction among the reported factors presenting as associates, correlates, risks, and protective factors of self-harm. Similarly, the reported reasons for self-harm may not dichotomously fall neatly into intrapersonal and interpersonal reasons.

Finally, using the MMAT, the majority (57.9%) of the reviewed studies were rated between ‘high’ and ‘very high’ methodological quality – see Appendix 2.14. However, a detailed look at each of these papers reveals clear methodological problems and inefficiencies (see Appendix 2.13). As shown elsewhere about other popular critical appraisal tools (Hannes, Lockwood & Pearson, 2010), it could be possible that the MMAT is not robust and sensitive enough in identifying some key plausible weaknesses in published primary studies.

2.4.10. Future Directions

This review warrants an urgent research attention onto the phenomenon of self-harm in young people across sub-Saharan African countries as outlined as follows. Future studies should consider expanding the evidence base on the prevalence estimates of self-harm among young people in non-clinical contexts (e.g., community, schools, etc.), as high prevalence rates of self-harm are often reported in non-clinic based samples of young people, compared to clinical samples (Doyle et al., 2015; Muehlenkamp et al., 2012). Participants in such prevalence studies should include other minority, and vulnerable groups of young people (e.g., homeless and other out-of-school children and youth; lesbian, gay, bisexual, and transgender [LGBT] youth; orphans, and other children and youth in especially difficult circumstances including disability, juvenile detention), who are often unrepresented or under-represented in population based studies on issues affecting young people (Cheng et al., 2014; Meissner & Bantjes, 2017). For example, evidence from high-income countries is showing that LGBT adolescents and youth

are more vulnerable to self-harm, compared to other groups of young people in the general population (McDermott & Roen, 2016). Recently, evidence of school-based studies from sub-Saharan Africa – and across the African continent, generally – indicates that the population of young people with LGBT and other sexual minority orientation is growing (Mucherah, Owino & McCoy, 2016; Poteat et al., 2017). However, studies on their (mental) health needs are limited (African Union, 2017; kabiru et al., 2013; Patton et al., 2016).

Also, evidence of recent systematic reviews and primary studies from high-income countries indicates that, street-connected children and adolescents represent a good case example of a high-risk group whose self-harm (and suicidal) behaviours have received inadequate attention in the recent research literature (Barrett, Griffin, Corcoran, O'Mahony & Arensman, 2018; Fry, Langley, & Shelton, 2017; Hodgson, Shelton, van den Bree & Los, 2013; Kidd, 2006; Kidd & Kral, 2002; Rhoades et al., 2018).

This review considers self-harm in young people across sub-Saharan Africa to be a complex phenomenon, given the relatively difficult and adverse socio-economic and multicultural contexts within which young people in the sub-region live (Kabiru et al., 2011, 2013; Rohde, 2011; White, Marsh, Kral & Morris, 2016). Therefore, besides the use of cross-sectional research to expand the evidence base on the prevalence estimates of self-harm, future studies should consider employing other robust methods (including rigorous qualitative methods, longitudinal designs, case-control designs, and mixed methods approaches) to explore the correlates, associates, risks, and protective factors associated with self-harm in young people in the sub-region. This recommendation is also based on the observation that many of the included quantitative cross-sectional questionnaire surveys assessing correlates of self-harm could have benefited from a qualitative component (e.g., through the use of interviews or focus group discussion etc.) to introduce some contextual understanding regarding "how" the factors are correlated with self-harm and what this "means" to the participants. This will extend the research findings beyond merely reporting linear correlate or risk-factor associations with self-harm to potentially identifying key socio-cultural and historical contextual factors related to the behaviour (Chandler, Myers & Platt, 2011; Hjelmeland, 2016; Rogers & Apel, 2010; Schiepek et al., 2011). In carrying out future studies, researchers should clearly define self-harm (or whichever alternative construct they use), and more imperatively, actually present to participants the construct's operational definition used in the study, in order to facilitate recall and "accurate" responses.

Although possible real variations could exist across the countries within sub-Saharan Africa in terms of the prevalence of self-harm in young people, the differences in the prevalence rates observed in this review may partly be reflective of error in measurement, differences in assessment tools, and sampling. Therefore, to draw much stronger conclusions generalisable across sub-Saharan Africa (and possibly add to the global picture of the phenomenon) future research should consider intra-regional and cross-national comparative studies, given that most socio-cultural and contextual nuances are largely similar rather than different across countries within sub-Saharan Africa (African Union, 2017; Gyekye, 2003; Hjelmeland et al., 2006).

Available evidence suggests that strengthening protective and promotive factors within families, schools, and at local community levels can have significant positive effects on improving the developmental outcomes of vulnerable young people (Patel et al., 2008; Rissanen et al., 2013; Skegg, 2005; WHO, 2012). However, the position of this review is that the first step to strengthening any available protective factors is identifying the existence of these protective factors within the context of interest. Thus, as much as risk-factor studies are immediately needed across the African continent (Sharan et al., 2009), future research should also consider exploring the factors (e.g., social support, parenting styles, school climate, etc.) which serve to protect young people in sub-Saharan Africa from engaging in self-harm.

Further, the relevance of future studies focused on exploring the methods of self-harm among young people in sub-Saharan Africa cannot be overemphasised. Evidence from such studies will, among other benefits, inform prevention strategies, such as access to means restriction policies at the family, school, and national levels (Hawton, 2005; Hawton, Saunders & O'Connor, 2012; Knipe et al., 2017; Yip et al., 2012).Future studies interested in examining the self-harm methods used by young people in sub-Saharan Africa should consider the use of qualitative research strategies (e.g., semi-structured interviews, etc.) which allow participants to self-report methods used. Where pre-identified self-harm methods are used in future quantitative cross-sectional studies, it should be ensured that all self-harm methods commonly reported by young people are included, in addition to allowing participants to specify “other self-harm methods used” in an open-ended question format (Swannell et al., 2014).

Studies included in this review sparsely reported age and gender differences and similarities across the various aspects of self-harm researched, thereby making it impossible to assess and map out the relevant age and gender-

specific issues (e.g., risks, methods, prevalence etc.) that may be associated with self-harm. It is thus recommended that regardless of the aspect of self-harm studied, future research should endeavour to explore possible age and gender differences and similarities, as such evidence is imperative for understanding the behaviour and designing prevention and intervention programs.

2.4.11. Conclusion

Together, the included studies in this review suggest that self-harm is a public (mental) health challenge in young people across countries within sub-Saharan Africa. The available limited studies, mainly below high methodological quality, from less than 30% (13/46) of countries within the sub-region show that the prevalence estimates of self-harm are comparable to those observed in high-income countries but vary significantly across the countries in the sub-region. Few studies from very few countries have examined the methods of self-harm, risks, protective factors, and the reasons associated with the behaviour. The findings of the reviewed studies were overly influenced by the use of pre-existing Western derived models and measures. Thus, this review recommends research attention onto the phenomenon of self-harm in young people across countries within sub-Saharan Africa, particularly, those countries not included in this review, in order to provide more expansive evidence, as to the extent of the phenomenon, to inform prevention and intervention programs within the sub-region.

Chapter 3

3.0. Prevalence and correlates of self-harm among in-school and street-connected adolescents in Ghana: A cross-sectional survey in the Greater Accra Region.

3.1. Introduction and Rationale

Guided by the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) reporting guidelines (Vandenbroucke et al., 2007), this Chapter describes the second empirical study (which also represents the first primary study) of this thesis: a cross-sectional self-report anonymous questionnaire survey of in-school and street-connected adolescents in the Greater Accra region of Ghana.

In sub-Saharan Africa, the systematic review section of this thesis (Chapter 2) shows a median lifetime prevalence estimate of 13.5% and a 12-month median prevalence estimate of 14.3% (interquartile range [IQR]: 11.1% – 22.2%). It was reported in the review that various factors were associated with adolescent self-harm in sub-Saharan Africa: depression, hopelessness, psychiatric illness, conflict with parents, physical and emotional abuse in the family, academic failure, romantic relationship problems, and lack of social support. Although adolescents generally reported multiple means of self-harm, clinical samples of adolescents predominantly reported overdose of medication, whereas adolescents in school and community contexts mostly reported self-cutting. The review also showed that even though some adolescents simultaneously reported suicidal and non-suicidal motives, often adolescents involved in non-clinic-based studies reported multiple non-suicidal intrapersonal and interpersonal reasons for their self-harm.

However, the majority (61%) of the available studies providing evidence on the prevalence estimates, correlates, risks, and the reported methods and reasons regarding self-harm in adolescents in sub-Saharan Africa were conducted in South Africa, with no study on self-harm (defined without regard to the intent of the act) in non-clinical adolescent samples from Ghana (Chapter 2). Therefore, drawing on the key findings and recommendations of the systematic review of the literature on adolescent self-harm in sub-Saharan Africa (Chapter 2), the present study contributes to filling this knowledge gap.

3.1.1. Aim and Research Questions

The present study sought to estimate the self-reported prevalence and describe some of the common socio-demographic factors and negative life events associated with self-harm in two non-clinical adolescent populations (in-school and street-connected adolescents) in the Greater Accra region of Ghana. Additionally, this study sought to facilitate the identification of adolescents who had self-harm histories to be sampled for the third empirical study (which represents the second primary study) of this thesis, a qualitative exploration of the lived experiences of self-harm in adolescents (Chapter 4).

Specifically, based on the broader basic aim of this thesis (Chapter 1, Section 1.2.7) and the key recommendations by the systematic review of previous studies across sub-Saharan Africa (Chapter 2, Section 2.4.10), this anonymous self-report questionnaire survey sought to address the following five questions:

1) What are the self-reported lifetime, 12-month, and 1-month prevalence estimates of self-harm among in-school and street-connected adolescents?
2) What are the predominant methods of self-harm reported by adolescents?
3) What predominant reasons do adolescents state for their self-harm?
4) What are the significant overall, school-specific, and street-connected socio-demographic factors and negative life events associated with self-harm within 12 months among adolescents?
5) Are adolescents who self-harm a homogenous group, in terms of certain common socio-demographic factors and negative life events?

3.2. Method

3.2.1. Setting

The Greater Accra region of Ghana was the setting for this cross-sectional survey. Chapter 1 of this thesis provides a detailed description of the geographic scope and general setting for this research and the justification for the choice of setting. Specifically, three contexts in the Greater Accra region were used for this cross-sectional study: 1) selected second cycle schools - the assembly halls and classrooms of participating schools, 2) facilities of charity organisations – offices of selected charity organisations were designated for the purpose of data collection for this study, and 3) selected street census enumeration areas – here, the survey was administered to participants at the work and sleeping places of street-connected adolescents, street corners, quiet spots of restaurants, markets, train and bus stations, and lorry/car parks.

3.2.2. Population and Sample of Study

This study set out to recruit a regionally representative sample of two groups of adolescents aged between 13 and 25 years in the Greater Accra region of Ghana: in-school adolescents and street-connected adolescents. The 2010 national population and housing census of Ghana estimated the total population of the Greater Accra region to be 4,010,054. Of this total population, 30.7% are young people aged between 10 and 24 years (GSS, 2013b). Chapter 1 (Section 1.2.6.4) of this thesis highlighted some of the common demographic characteristics of young people in the Greater Accra region. As at January 2016 when this study was conceptualised and designed, there were 804,974 students (423,090 males and 381884 females) in senior high schools, and 42,513 students (31,959 males and 10,664 females) in technical, vocational and business schools in Ghana (GES, 2015a, 2015b). The Greater Accra region had 16.3% of all second cycle schools in Ghana: 104 senior high schools (attended by 38,958 males, and 35,579 females) and 31 technical, vocational, and business schools – attended by 4,250 males and 510 females (GES, 2015a, 2015b). Thus, there were 79,297 students in second cycle schools in the Greater Accra region, as at the beginning of the year 2016. It is noteworthy that second cycle schools in Ghana are attended by young people aged between 13 and 25 years, even though education at this level mainly targets – and is predominantly attended by – young people aged 15–17 years (Akyeampong, 2010; Ananga, 2011a, 2011b).

Although street-connected children and youth remain part of the urban scene in Ghana, there are no official national statistics on this population of young people. The latest available official report of census conducted in the Greater Accra region has identified 61,482 street-connected children and youth (females = 57%; males = 43%), of which the majority (57%) are aged 11-18 years (DSW et al., 2011).

For the purpose of *a priori* sample size determination for this study, the total size of the population of interest was taken as the sum of the total number of students in second cycle schools in the Greater Accra region (n = 79,297) as reported by the Ghana Education Service (GES, 2015a, 2015b) and the total number of street-connected children and youth (n = 61,482) in the Greater Accra region as reported by DSW et al. (2011): 140,779.

3.2.2.1. *A priori* sample size calculation

A sample size of 2,360 was calculated based on Krejcie & Morgan's (1970) formula for determining sample size for prevalence studies:

$$S = \frac{\chi^2 NP(1-P)}{d^2(N-1) + \chi^2 P(1-P)}$$

Where:
S = sample size
χ^2 = Chi square at df =1 for desired confidence interval level
N = population size
P = population proportion (assumed to be 0.50), and
d = degree of accuracy (expressed as a proportion).

In this thesis, the values of the elements entered into the equation (χ^2 = 3.84, N = 140,779, P = 0.50, d = 0.02) were chosen because the computation yielded a larger sample size (S = 2,360), which allowed for the provision of at least 10 events per variable (EPV) required for the development of logistic regression models (Ogundimu, Altman & Collins, 2016; Peduzzi, Concato, Feinstein & Holford, 1995; van Smeden et al., 2016). However, a total of 2,478 copies of the questionnaire were printed (representing 5% increase of the calculated sample size) in order to provide for non-response or missing data/spoilt questionnaires (Kelley, Clark, Brown & Sitzia, 2003).

3.2.3. Design

A cross-sectional survey design (Thelle & Laake, 2015; Woodward, 2014) involving the use of an anonymous self-report questionnaire was adopted for this study. This approach was deemed appropriate, as the basic aim of this study was to estimate the prevalence and describe some of the common factors associated with self-harm at a single point in time among non-clinical samples of adolescents (Kelley, Clark, Brown & Sitzia, 2003; Thelle & Laake, 2015; Woodward, 2014). Previous methodological reviews (e.g., Burless & De Leo, 2001) and primary studies on self-harm among adolescents within both high-income, and low- and middle-income countries have found the adoption of cross-sectional surveys useful in contributing important (public health) information about the prevalence and factors related to self-harm (e.g., Bhola, Manjula, Rajappa & Phillip, 2017; Madge et al., 2011; Zubrick et al., 2016). Aside from the advantage of anonymous self-report questionnaires reducing the chances of socially desirable and inaccurate responses (e.g., Hawton, Rodham & Evans, 2006; Singhal & Bhola, 2017), the use of anonymous self-report questionnaires has been found to be the most appropriate method for studying research topics that are private and sensitive such as self-harm, particularly, among adolescents (Burless & De Leo, 2001; Saunders, Resnick, Hoberman & Blum, 1994). More pointedly, available evidence shows that in non-clinical studies of self-harm among adolescents, participants who would admit to self-harm or suicidal thoughts anonymously would deny having engaged in such behaviours if such admission would let them be identified (Lloyd-Richardson, Lewis, Whitlock, Rodham, & Schatten, 2015; Shochet & O'Gorman, 1995; Singhal & Bhola, 2017).

3.2.4. Measures

A 4-section 66-item questionnaire was used for this survey (Appendix 3.1). The items on the questionnaire were adopted from existing measures designed to assess self-harm in adolescents mainly in high-income countries. This was informed by the fact that the research field of self-harm is replete with various definitions and disagreements regarding classifications, while no standardised measures exist for research assessment of self-harm in adolescents in Ghana, sub-Saharan Africa, Africa or LAMICs. The limited time of this PhD project also prevented the adaptation and validation of newly standardised non-African measures for this study. Key item groupings on the questionnaire and their sources have been presented in Appendix 3.2. Where the existing measures were not publicly available, original authors were contacted and their permission sought for

the adoption of relevant items for this study; for instance, the Suicide Attempt Self-Injury Interview (SASII) by Linehan, Comtois, Brown, Heard and Wagner (2006).

Section A of the questionnaire contained 16 items related to socio-demographic data (e.g., gender, age, religious background, educational background, living arrangement etc.), and substance use/lifestyle information (e.g., alcohol use, drug use, cigarette smoking, etc.).

Questions in Section B (25 items) were about negative life events occurring within the previous 12 months. They were generally related to the adolescent's personal life [e.g., "Have you had worries about your sexual orientation (i.e. that you may be gay or bisexual)?"], family issues (e.g., "Have you had any serious arguments or fights with one or both of your parents?), school related issues (e.g., Have you had problems keeping up with school work?), and interpersonal relationship negative events (e.g., Have you had any serious problems with your boyfriend or girlfriend?). The items in Section B were mainly adopted from the Child and Adolescent Self-harm in Europe studies – CASE (Hawton et al., 2002, 2006; Madge et al., 2008, 2011). Two items in Section B (i.e., bullying, and being sent away from school) were adopted from the 2012 WHO–Global School-based Student Health Survey in Ghana (Owusu, 2012). Predominantly, the response format of the items in this section was dichotomous ("no" or "yes").

Section C had 24 main questions (some had sub-questions or follow-up questions, and navigation notes) adopted from various sources. The question assessing lifetime self-harm [i.e., "Have you actually ever intentionally harmed yourself? (e.g., cutting, burning, or poisoning yourself, or tried to harm yourself in some other way, for example, hanging, jumping from height etc.)"] was adopted from the CASE studies (Hawton et al., 2002, 2006; Madge et al., 2008, 2011). Items related to age at onset of self-harm/first episode of self-harm, and the frequency/counts of self-harm within the previous 12 months, and one-month self-harm were adopted from the Self-Injurious Thoughts and Behaviors Interview – SITBI (Nock, Holmberg, Photos & Michel, 2007). Section C also had a checklist of 16 frequently reported methods of self-harm (e.g., hanging, hitting body, cutting, poisoning, etc.) adopted mainly from the Suicide Attempt Self-Injury Interview – SASII (Linehan et al., 2006). The primary researcher added an "other" category – a blank space asking participants to indicate other methods of self-harm they might have used but were not in the checklist. Furthermore, Section C provided a checklist of 15 frequently reported reasons/motivations for self-harm. For example, "my thoughts were so unbearable, I could not endure them any longer", "I wanted to die", "I wanted show someone how much I loved him/her", inter alia. These items on

reasons for self-harm were adopted from the CASE studies (Hawton et al., 2002, 2006; Madge et al., 2008, 2011) and the WHO/EURO Multicentre Study on Suicidal Behaviour (Hjelmeland et al., 2002). A previous cross-national comparative study between a Western country (Norway) and a sub-Saharan African country (Uganda) testing the items on this checklist found satisfactory consistency between the two countries (Hjelmeland et al., 2008). In the present study, the primary researcher added an "other" category – a blank space asking participants to indicate other reasons they had for the last episode of self-harm before the survey, which were not in the checklist.

Section D had one super-ordinate researcher-created open-ended question regarding the adolescents' own opinions about what roles each of the following could play to prevent self-harm among adolescents in Ghana: young people (adolescents themselves), families (e.g., parents, siblings, other relatives), friends/peers, schools (e.g., teachers, school counsellors, school heads), charity facilities, religious groups (e.g., churches, mosques), and the government. Even though Section D had the potential of providing the study with rich information as to the adolescents' own views on self-harm prevention among young people in Ghana, the section was considered "irrelevant" to this survey as it was not considered in the analysis and presentation of the results in this Chapter of the thesis. The participants' responses to this open-ended question were included in the presentation of the qualitative study (Chapter 4, Section 4.3.4) and the general discussion of this thesis (Chapter 5, Section 5.8.2). Section D was meant to keep all the (in-school) adolescents engaged for the entire duration of the survey. It was hoped that responding to the question in Section D would help reduce the risk of some adolescents being able to speculate who had self-harmed, as those who had no history of self-harm were likely to finish responding to the questionnaire earlier, while those with histories of self-harm were likely to need more time to fill in the questionnaire. The idea is that, the use of generic open-ended questions (often at the end of the questionnaire) in a self-report cross-sectional surveys has the potential of preventing adolescents who had not self-harmed from quickly completing the survey thereby creating an obvious time difference between them and other adolescents who might have self-harmed (Hawton et al., 2006) – the time difference might inadvertently signal to some participants that others, in taking longer, might have self-harmed, a situation which otherwise could have potentially compromised the anonymous position of this survey.

The questionnaire was in English, as the English language is the lingua franca and official language in Ghana. As indicated earlier in Chapter 1 (Section

1.2.6.3) of this thesis, English is the medium of instruction and examination at all levels of education in Ghana, while it remains a primary component of the language socialisation of children within urban families in the country (Nukunya, 2016; Salm & Falola, 2002). The questionnaire was expert-reviewed prior to administration to the participants of the survey.

3.2.4.1. Expert Review of Questionnaire

Besides the primary researcher and the two supervisors of this PhD project, a panel of three experts (a child-and-adolescent-health researcher, a developmental [child] psychologist, and a suicidologist) based in Ghana, the primary context of this study, reviewed the draft version of the questionnaire for this study. Among other things, this panel of experts made recommendations for the inclusion, exclusion and modification of specific items on the questionnaire. They also assessed whether or not the “less than average” second cycle school student in the Greater Accra region could read, understand and respond to the questions asked in the survey. They also checked the suitability of the length and formatting of the questionnaire, and generally how the potential adolescent participants would receive the questionnaire.

It has been argued that, “the real experts on how a questionnaire will be received by young people are young people themselves” (Heath, Brooks, Cleaver, & Ireland, 2009, p. 138). However, in this thesis, field testing of the draft questionnaire among adolescents was not possible mainly due to the time constraints within which to submit this PhD thesis for examination. Expert review of survey questionnaire has been found to be useful and represents one of the key quality assurance procedures in the design and implementation of survey research of children and young people’s lives (Heath et al., 2009). Previous studies have observed that experts are able to identify items on a questionnaire that can present data quality problems which can potentially lead to lower data quality in the survey (Olson, 2010; Presser et al., 2004; Yan, 2017). In the present study, consistent with the observation by Graesser, Kennedy, Wiemer-Hastings and Ottati (1999), the expert review of the draft questionnaire revealed the use of “unfamiliar technical terms” (e.g., suicide, committed, deliberately), and “amalgamation of more than one question category” (e.g., “Has anyone among your family or friends committed suicide?”). The list of survey items the expert review recommended to be modified have been presented in Appendix 3.3. Generally, in reviewing the preliminary questionnaire of this study, the experts were largely influenced by their concern for ensuring that the questions asked in the survey and the terms used would not unduly increase the chances for socially desirable responses (given the sensitive

and stigmatised nature of self-harm) or would not unnecessarily exacerbate negative emotions of (vulnerable) participants (Tourangeau & Yan, 2007). Finally, given the sensitive nature of self-harm (the topic of interest to this study), the expert reviewers also ensured that the English language used in preparing the questionnaire was pitched at a level appropriate for the readability and comprehension of an average Primary 6[12] pupil. Ensuring that the level of the language used for the construction of the survey questions was age-appropriate and easy to read and understand by the participants was also necessitated by the evidence that generally children and young people (including street-connected children and youth) may feel embarrassed or ashamed when they cannot comprehend what an adult is asking in a research context; instead of asking for clarification, they may rather provide meaningless responses or request to leave the research context altogether (Hutz & Koller, 1999).

3.2.5. Sampling and Procedure

Separate sampling and survey administration procedures between in-school and street-connected adolescents were followed as outlined below.

3.2.5.1. In-school Adolescents

A multi-stage sampling technique (Sturgis, 2007) was used to select in-school adolescents for this study. The technique involved two stages: random selection of schools, and random selection of classes.

3.2.5.1.1. Selection of schools

The latest list of all second cycle schools in the Greater Accra region was obtained from the Regional Directorate of the Ghana Educational Service in Accra (GES, 2015c). Among other details, the list mainly provided the names of the schools, their specific geographical locations within the region, gender (whether mixed or single-sex), type of school (i.e., senior high school, or technical, vocational and business school), and the category (A, B, or C) to which each public senior high school belongs.

Chapter 1 (Section 1.2.6.4.3) of this thesis provides a description of second cycle education and schools in Ghana. In all, there were 135 schools

[12] In Ghana, Primary 6 is the upper grade of primary school which precedes junior high school, before second cycle education. Typically, pupils in Primary 6 are aged between 9 and 12 years.

categorised into senior high schools (n=104), and technical, vocational and business schools (n=31). These two categories were further classified in terms of single sex or co-educational, and privately owned or government funded schools (see Figure 3.1). Of the 135 schools, 28 were randomly selected, their locations mapped out, and invited to participate in the study (privately owned schools = 8; government funded schools = 20). Thus, all categories of second cycle schools in the Greater Accra region of Ghana were represented in this study. The names of all the schools in each category were entered into Excel spreadsheet and assigned numbers. Simple random selection of the schools was then performed using the Random Order Generator tool[13] (Endmemo, 2016). The required number of schools in each category was picked consecutively beginning from the top of the generated list.

In this study, more government schools (n=20) than privately owned schools (n=8) were invited to participate. The primary researcher met with the head of each invited school and discussed the purpose and procedures of the study, after presenting a letter to each head of school inviting their school to participate in the study (Appendix 3.4 shows 'Letter for Permission to Heads of Schools'). Besides the invitation letter, a participant information sheet (providing details on the purpose of the study, roles and rights of participants, and ethical approval of the study) and a consent form to be signed by the head of school to indicate permission (or otherwise) of the study in their schools were also enclosed (Appendix 3.6).

[13] Random Order Generator tool is available at: www.endmemo.com/math/randomorder.php

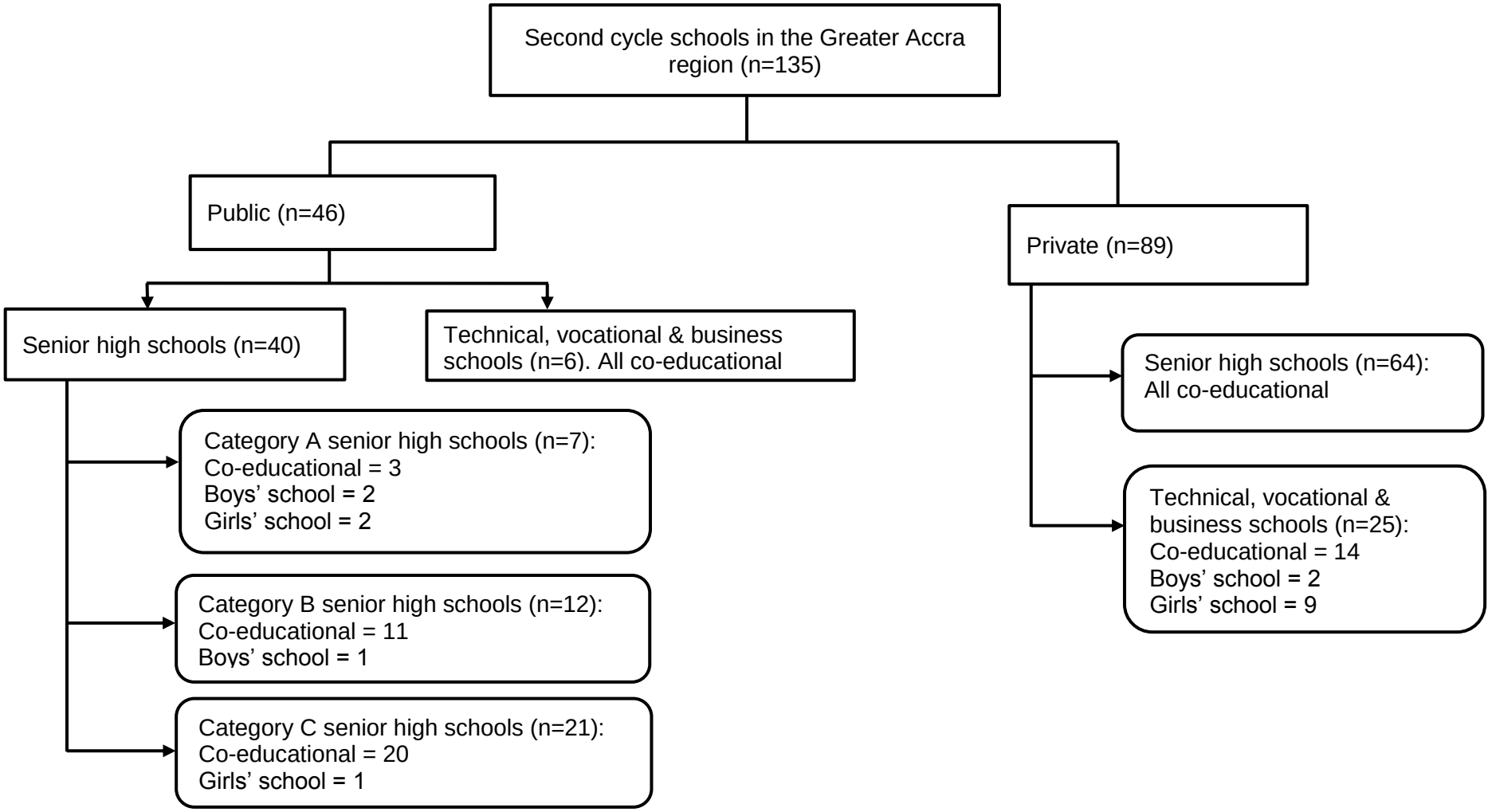


Figure 3.1: Categories of second cycle schools in the Greater Accra region. Author created Figure 3.1. based on list of schools obtained from the Regional Directorate of the Ghana Educational Service, Accra (GES, 2015c).

Of the 28 schools invited, the heads of 20 schools agreed and signed the consent form permitting the study to be conducted in their schools. The heads of eight schools declined to permit the study in their schools: the heads of three schools indicated that several similar surveys had been conducted recently in their schools and as such they were worried that the students might feel overwhelmed by the continuous participation in several research surveys over a short period of time; the heads of two schools cited busy academic work as the reason for not permitting the study to be conducted in their schools, while the heads of three schools did not respond at all to the invitation to participate in the study.

As shown in Figure 3.2, 13 government schools (12 senior high schools, & 1 technical, vocational and business school), and seven privately owned second cycle schools (5 senior high schools, & 2 technical, vocational and business schools) participated in the study. The participating and non-participating schools were similar in terms of key school and location characterisitcs.

3.2.5.1.2. Selection of classes

Generally, second cycle schools in Ghana are organised based on year of study – i.e., Form 1, Form 2, and Form 3. Students in Form 1 are first year students, Form 2 students are in year 2, and Form 3 students represent final year students. Depending on the student population and programmes offered by a school, each Form can have several classes (e.g., Form 1A, 1B, 1C, Form 2A, 2B, Form 3A, 3B etc.). The national average of second cycle school class size in Ghana is 40 students; however, some schools have average class sizes ranging between 50 and 65 due to recent continuous increase in enrolment (Zainul-Deen, 2011). In this study, the sample of students selected from each participating school was proportional to the student population of the respective school and the predetermined sample size for the study. Following the computation of the required sample per selected school, names of all the classes, regardless of the year of study, were entered into the Random Order Generator tool (Endmemo, 2016). The eligible classes were picked consecutively beginning from the top of the generated list (Appendix 3.5). All the students in each randomly selected class were eligible to participate in the study. Previous nationally representative school-based studies examining health behaviours among adolescents in Ghana have found the multi-stage random sampling strategy useful in accessing representative samples of students (e.g., Asante, Kugbey, Osafo, Quarshie, & Sarfo, 2017; Ohene, Johnson, Atunah-Jay, Owusu, & Borowsky, 2015; Owusu, 2012; Owusu, Hart, Oliver, & Kang, 2011).

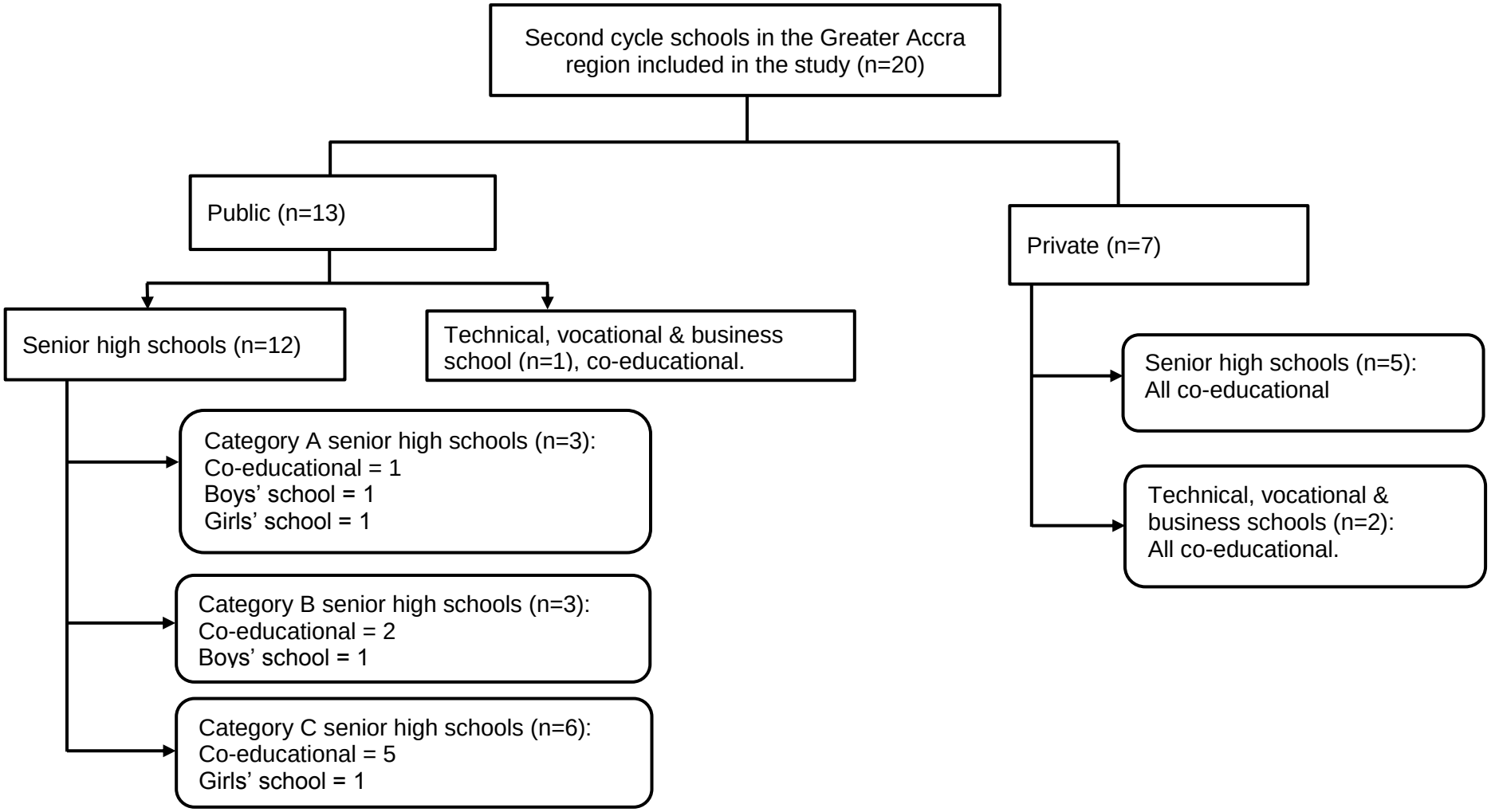


Figure 3.2: Categories of second cycle schools in the Greater Accra region which agreed to participate in the study

3.2.5.1.3. Recruitment of in-school adolescents

Following permission for the study by the heads of the selected schools, the primary researcher arranged with each school to make a presentation of the study to the randomly selected classes brought together in the assembly hall of each school. The presentation involved the use of a computer projector and a screen. In terms of content, the presentation covered the purpose and rationale for the study, benefits and potential risks, and the rights and roles of participants. For example, the primary researcher informed the students that participation in the study would be in two phases; some students who participate in the anonymous survey might be requested to grant the primary researcher a one-to-one interview in a private and safe place (e.g., clinic, office at a community centre, or a safe place of the student's choice) where the student would share in detail their histories of self-harm with the primary researcher.

In addition to English, the primary researcher made the presentation also in Ga[14], and Twi, the two main local languages spoken in the Greater Accra Region – even though English is the main language of instruction and examinations across all levels of classroom education in Ghana. The additional use of Ga and Twi for the presentation was to ensure that the potential participants of the study thoroughly understood and were satisfactorily informed about the study.

Basically, there were two purposes for the presentation of the subject matter of the study to the potential adolescent participants: 1) to meet the ethical requirement of ensuring that potential participants were fully informed about the study and their concerns and questions addressed in a language they understood, prior to inviting the potential participants for the study (Berman, 2016; Embleton et al., 2015); and 2) to establish familiarity and rapport with the participants towards facilitating a participant-researcher relationship. After the presentation, the primary researcher invited the students to ask questions and to raise their concerns. Across all the selected schools, a few questions and concerns were raised by the students following the presentation. For example, even though the primary researcher stated that all information provided by the participants would be kept confidential, some students still wanted to know in specific terms if their heads of school or parents would get to hear about their responses, particularly, in the interview. In response, the primary researcher reassured the students that no one would get to know about

[14] The Ga language is also known in Ghana as the Ga-Dangme language.

their responses. However, if during the interview, a participant revealed any intentions of killing himself/herself or harming or killing others, or if a participant told the primary researcher about any serious or sufficiently alarming criminal activity that they have been involved in (e.g., child prostitution, drug trafficking, etc.), the primary researcher would have to alert the appropriate authorities (e.g., School head, the Ghana Mental Health Authority Crisis Services, the Department of Social Welfare, or the Ghana Police Service). However, the primary researcher reassured the students that this kind of information was not sought in the study and so there was no expectations of any such issue. On average, the presentation and interaction with the students lasted between 35 and 45 minutes.

Having addressed the concerns of the students, the primary researcher invited the students to participate by emphasising that every one of them qualified to participate in the survey whether or not they had self-harmed ever in their life. Each student indicated their willingness by raising their hands. Interestingly, across the selected schools all the students raised their hands at this point. The primary researcher then gave out to each student a “participant information sheet” (Appendix 3.6) and an “informed consent form” (Appendix 3.7). Additionally, each student aged less than 18 years received two copies of a “letter for consent to parents/guardians” (Appendix 3.8) and a “consent form to parent/guardian” requesting the consent of parents/guardians for the students’ participation in the study (Appendix 3.9). “Ethical considerations” in Chapter 1 (Section 1.2.8.1) provides further highlights on the ethical issues adhered to in this study. In each school, the actual administration of the survey was scheduled for a not-too-distant future date (preferably 3 days after the information talk) agreed upon between each school and the primary researcher. On the agreed date for the survey, each student aged less than 18 years was required to return one signed copy of the letter of informed consent to their parents/guardians indicating the parent’s/guardian’s permission for their wards to participate in the study. It was emphasised that students who did not return the letter or whose parents/guardians declined permission would not be allowed to participate in the study, even if the student was willing to take part. Across the 20 schools, 1,928 students were accessed and invited to participate in the survey (see Figure 3.3). It is worthy of note that across 85% of the participating schools (n=17), students in their final year of study were not available to participate in the study since they were writing the West African Senior Secondary School Certificate Examinations (WASSCE) – the common school-leaving examinations for senior high schools within West Africa.

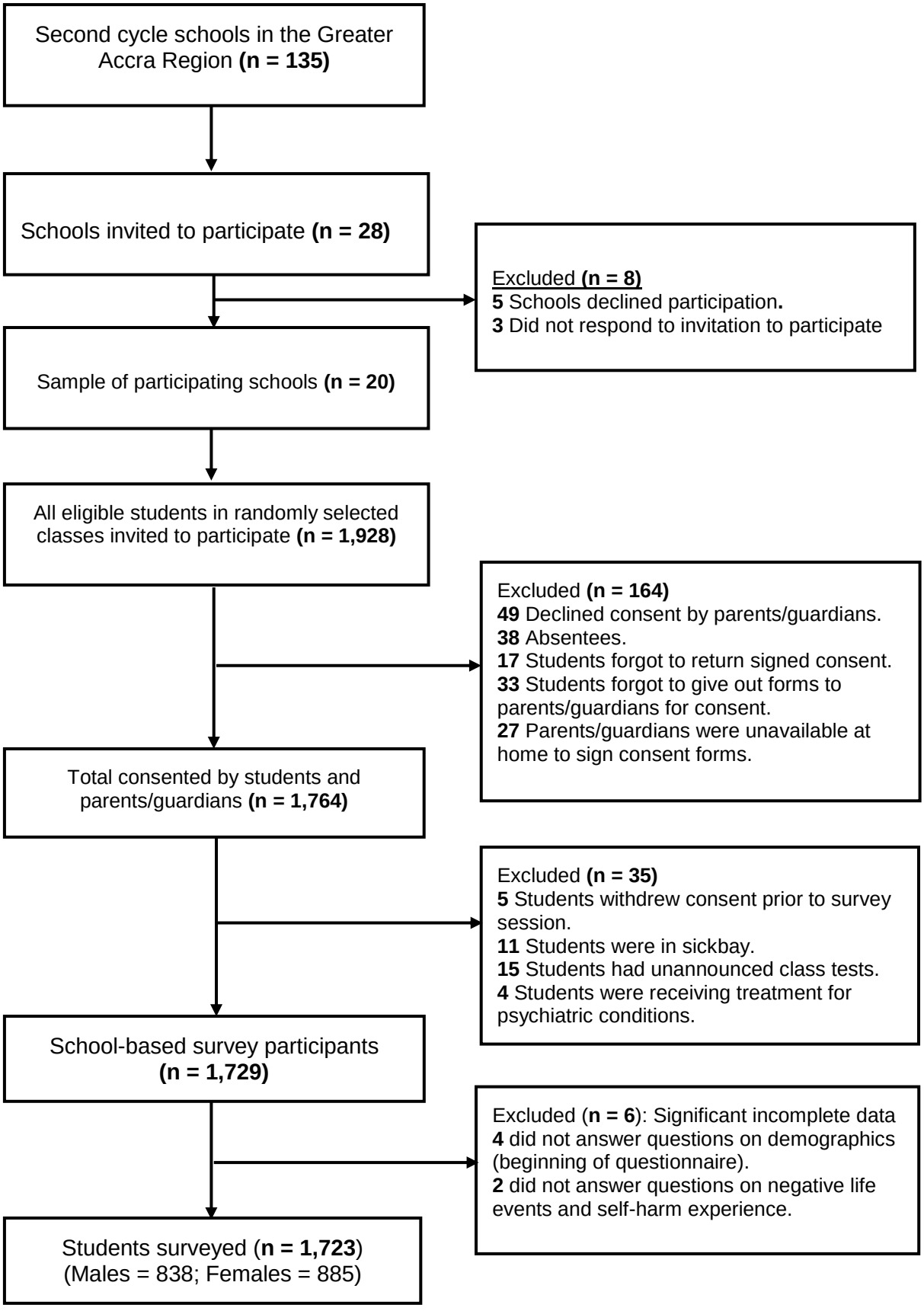


Figure 3.3: Summary of participant recruitment process for school-based questionnaire survey

3.2.5.1.4. Administration of survey to in-school adolescents

On the agreed future date for the survey, students in the randomly selected classes who took part in the research information presentation session were brought together in the assembly hall of the school or a larger classroom designated for the survey. The primary researcher read out the details of the study as contained in the participant information sheet (Appendix 3.6) to the students, after which the students were invited to ask any questions they might have. The primary researcher collected all signed informed consent forms (given out to both students and their parents/guardians). In all, 164 students were excluded from participating in the survey. As shown in Figure 3.3, this exclusion was based on several reasons, for example, the parents/guardians of 49 students declined to give their consent for their wards' participation in the study, while 38 students were absent from school on the day of the survey.

Participation was strictly voluntary and students willing to opt-out were free to do so without any implications. As shown in Figure 3.3, five students who had earlier signed the consent form to participate in the survey withdrew their consent, while 19 students withdrew from the survey because they had unannounced class tests. To further reinforce confidentiality, the sitting arrangement[15] of the students was such that each student sat far apart from each other as far as the dimension of the assembly hall allowed. The primary researcher also ensured that each student was within his clear view.

Teachers and heads of school were asked to stay in the background and not allowed to enter the assembly hall while the survey was in session. The primary researcher distributed the questionnaires (each enclosed in an opaque A-4 size envelope) to the students. An additional consent form (Appendix 3.10) was enclosed in the envelope requesting students who had personal history of self-harm to provide information as to how they could be contacted by the primary researcher in case they were interested in granting him an interview (on a future date) to share their self-harm experiences in-depth. The primary researcher read out clear instructions on how to respond to the survey. More importantly, he explained to the

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[15] On the day of the survey, the primary researcher arrived at the school, at least, 45 minutes earlier than the appointed time for the survey. During this period the primary researcher, with the voluntary help of some teachers of the school, arranged the seats in the assembly hall designated for the survey. Ample distance, as far as the hall allowed, was maintained between seats (Appendix 3.11).

students (in English, Ga, and Twi) the definition and meaning of self-harm as applied in the study. He intermittently emphasised that there were no ‘correct’ or ‘wrong’ answers and that the survey was not a school test or any other form of an examination. Upon completing the survey, each student placed their completed questionnaire and the additional consent form (whether filled and signed or not) in the opaque envelope and dropped it in a box placed nearer the exit door of the assembly hall. Appendix 3.11 provides examples of photographs taken from the field during the survey in schools.

The administration of the survey to the student participants took place within May and July 2017. Typically, the students spent between 40 and 45 minutes to complete the questionnaire. Across the 20 participating schools, the final samples of students who responded to the questionnaire varied between 42 and 125 students, with an average sample size of 86. Figure 3.3 provides a summary of the participant recruitment process for the school-based questionnaire survey. The response rate across the 20 schools ranged between 80.8% and 100%. In all, a total of 1,928 students were approached and invited to participate in the study, however, 1,723 answered questionnaires (Males = 838; Females = 885) were included in the final analysis of this study, representing a response rate of 89.4%.

3.2.5.2. Street-connected Adolescents

The sampling and procedure related to the street-connected adolescents involved four steps: formulation of inclusion and exclusion criteria, recruitment and training of fieldwork assistants, access and recruitment of street-connected adolescents, and administration of the survey to street-connected adolescents.

3.2.5.2.1. Criteria for inclusion and exclusion of street-connected adolescents

As mentioned earlier in Chapter 1 (Section 1.2.6.4.8), a street-connected child or adolescent in the Greater Accra region of Ghana has been identified by the Department of Social Welfare and collaborating organisations (2011, p.11) as “one who is under 18 years, is born on the street and lives with parent(s) on the street; migrated to the street; or is an urban poor child or street mother who survives working in the street”. Based on this definition and the aims of the present study a set of criteria for inclusion and exclusion was formulated to guide the recruitment of street-connected adolescents for the present study. Table 3.1 shows the list of inclusion criteria used. An eligible street-connected adolescent had to be within the 13–25 age band as applied in the recruitment of in-school adolescents for this survey.

In terms of exclusion criteria, a street-connected adolescent was ineligible if they showed visible signs of ill health, neurological impairment or signs of alcohol or drug intoxication or withdrawal (e.g., tics, tremors, violent behaviour, irritated gestures etc.); street-connected young persons who fell outside the 13 – 25 age band were also excluded; and street-connected adolescents who attempted participating in the survey more than once were also excluded.

Table 3.1. Criteria of inclusion of street-connected adolescents.

Parameter	Inclusion criterion
Age, "street life age"[16], and sleeping condition	A boy or a girl aged between 13 and 25 years[17] who self-identifies as sleeping rough for, at least, the last 6 months prior to the present study.
Living arrangement and relationship with family	– A boy or a girl born on the street, lives alone or with one or both parents on the street. – An urban poor adolescent or who survives working in the street. – A boy or girl who has migrated to the street and has remote or no contact with family.
Status	A street-connected mother or pregnant mother aged between 13 and 25 years who survives working in the street.

3.2.5.2.2. Recruitment and training of fieldwork assistants

After obtaining ethical clearance from Ghana for the study (Appendix 1.2), the primary researcher recruited and trained three fieldwork assistants to help in the administration of the survey to the street-connected adolescent participants. The involvement of fieldwork assistants in this study at this stage was necessitated by two main reasons. The first reason had to do with the fact acknowledged earlier that, unlike in-school adolescents, street-connected children and young people are fluid and dispersed within the street context and thus not found in a fixed or confined place. The involvement of fieldwork assistants meant that the survey could be carried out in several street locations at the same time thereby broadening the

[16] In this study, "street life age" is taken to mean the number of years a street-connected adolescent has being living in the street situation prior to the study.

[17] The 13 – 25 age band criterion was applied to the street-connected adolescent sample as applied to the in-school adolescent sample in order to ensure consistency of age range between the two groups of adolescents studied in this project.

coverage of the study among this group of young people. Secondly, the primary researcher was supposed to submit this PhD thesis within a limited time, hence, the involvement of fieldwork assistants expedited the survey data collection among this population.

Three bachelor's degree graduates (two females and a male, with backgrounds in psychology and social work) were recruited as fieldwork assistants for this study. Prior to their recruitment, the two female fieldwork assistants had conducted questionnaire surveys involving street-connected youth, to complete their bachelor's theses on psychosocial well-being related issues among street-connected children and adolescents within Accra during the 2015/2016 academic year; the male fieldwork assistant had had two years of experience volunteering (from 2014 to 2015) with two charity organisations which work with street-connected children and youth in the Greater Accra region.

The training of the recruited fieldwork assistants spanned two days and was conducted in a seminar room booked for this purpose on the Legon campus of the University of Ghana, Accra. The first day of the training involved presentations and demonstrations by the primary researcher, while the second day was devoted to brainstorming and discussion of safety and security related issues, and rehearsals of the survey administration by the fieldwork assistants, with the primary researcher providing guidelines. The presentations on the first day of the training covered the purpose of the study, characteristics of street-connected adolescents in the Greater Accra region as documented by previous studies (e.g., Awumbila & Ardayfio-Schandorf, 2008; DSW et al., 2011; Hatløy & Huser, 2005; Orme & Seipel, 2007; Quarshie, 2011[18]), and the modalities of conducting the survey and proper administration of the questionnaire. For example, how to administer the survey at the pace of the street-connected adolescents (Cohen et al., 1993).

The second day of the training focused on sharpening the practical transferable knowledge and skills of the fieldwork assistants regarding researcher-administered surveys to street-involved young persons. Often, "interviews with homeless people can be extremely harrowing" for researchers (Third, 2000, p. 457), hence, the fieldwork assistants engaged for this study were shown how to establish rapport and trust and ensure high level of comfort with the street-connected

[18] Quarshie (2011) was the primary researcher's master's thesis in which he conducted qualitative interviews involving street-connected children and adolescents, school children, and shop-keepers in Accra, aimed at examining perceptions of the public regarding the phenomenon of street children in Ghana.

adolescents. Among other key factors, during the rehearsals of the survey administration by the fieldwork assistants, the primary researcher paid attention to the voice characteristics of the fieldwork assistants (e.g. rate of speech, intonation, pitch, etc.) and how to vary those characteristics in relation to the type of question being asked. Previous studies have found that research participants tend to perceive researchers' attributes from their voices, with optimally pitched voices and moderate intonation and speech pace attracting positive ratings (eg., Charoenruk & Olson, 2018; Olson & Peytchev, 2007). Like the primary researcher, the three fieldwork assistants had excellent proficiency in formal English, Ghanaian Pidgin English[19], Ga, and the Twi language. Ga and Twi are the two major local languages predominantly spoken among street-connected children and young people, while others prefer the Ghanaian Pidgin English. Part of the training session was devoted to practicing the translating of each survey question into Ga, Twi, and Ghanaian Pidgin English.

Related to this, the primary researcher prepared the fieldwork assistants to deal with how they feel about street-connected children and youth generally, in order to collect the data sensitively and effectively. The view of this project is that street-connected children and youth are young people who are growing up in harsh circumstances. Evidence suggests that researchers who perceive this young population as outcasts, criminals or deviants, or see them as very resilient and competent young people or feel sorry for street-connected children and youth and want to provide them with assistance tend to experience emotional difficulties (e.g. fear or feeling of sympathy and sadness) or tend to overly romanticise street-connected children and youth. These represent deficiencies which militate against effective data collection among street-connected young people (Aptekar, 2014; Aptekar & Stoeklin, 2014; Hutz & Koller, 1999; Young, & Barrett, 2001). Even though the view of this study was consistent with the perception of the fieldwork assistants regarding street-connected young people, the primary researcher reiterated the position of this project during the training session in order to reinforce the fieldwork assistants' perception that street-connected children and youth are young people who are growing up in harsh circumstances.

For the purposes of excluding ineligible and including eligible street-connected adolescents in this study, the fieldwork assistants were also trained on

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[19] Ghanaian Pidgin English is also known in Ghana as "Broken English", "Kru English", or simply, "Pidgin". It is often adopted as an in-group language by – highly educated, less educated, and non-educated/illiterate - young males in Ghana (Huber, 1995).

how to perform a mental status exam. According to Aptekar and Stoecklin (2014, p.144) a mental status exam of street-connected children and youth prior to inclusion as research participants is “the psychological equivalent of a physician’s physical exam thus providing a look into the child’s mental health at the moment”. The mental status exam included assessing the mental and physical health state of street-connected participants through observation; looking out for visible signs indicative of ill health, neurological impairment or signs of alcohol or drug intoxication or withdrawal. For example, tics, tremors, violent behaviour or aggressive gestures, among others. *A priori* mental status screening of street-connected participants provides insight into the health issues which can affect the responses of the participants in the study (e.g., Aptekar, 2014; Aptekar & Stoeklin, 2014; Bassuk, Richard & Tsertsvadze, 2015; Hutz & Koller, 1999; Kieu, Rezai & Henderson, 2016). As indicated already, the data of participants who were found to show signs of these mental status challenges at the time of this study were excluded (see Figure 3.4).

3.2.5.2.3. Access and recruitment of street-connected adolescents

Generally, street-connected children and adolescents can be described as a ‘hard-to-reach’, ‘hard-to-survey’ or a ‘non-traditional’ population (Tourangeau, 2014; Tourangeau, Edwards, Johnson, Bates & Wolter, 2014; Wright, Allen & Devine, 1995). This is due to the facts that street-connected children and youth – like other homeless populations – are difficult for researchers to access; there is no available reliable source based on which to estimate the sampling frame or exact size of this population; subgroups exist among this population; and it is impossible to randomly sample street and homeless populations (Sydor, 2013; Tourangeau et al., 2014; Wright et al., 1995). Therefore, in order to maximise participation and statistical power – and minimise potential nonresponse rates – it is recommended that researchers adopt multi-site and multiple sampling strategies (Becker, Berry, Orr & Perlman, 2014; Lavallee, 2014; Third, 2000; Tyler, Whitbeck, Hoyt & Johnson, 2003; Wright et al., 1995). More importantly, the adoption of a multi-site approach and multiple sampling strategies in the study of a hard-to-survey population enables the researcher to capture a fair representation of various subgroups and characteristics within the population, thereby reducing the bias of lower coverage associated with the use of a single sampling strategy (Cohen, et al., 1993; Platt et al., 2006; Sydor, 2013; Third, 2000; Tyler et al., 2003).

In Ghana, previous studies conducted with street-connected children and youth in the Greater Accra region have, predominantly, combined several sampling

techniques including snowball, capture-recapture, facility-based, and respondent-driven sampling techniques (e.g., Anarfi, 1997; Asante, 2015a, 2016; Asante & Meyer-Weitz, 2017; Asante, Meyer-Weitz & Petersen, 2015, 2016; Awumbila & Ardayfio-Schandorf, 2008; DSW et al., 2011; Hatløy & Huser, 2005; Orme & Seipel, 2007). In the present study, the facility-based sampling, indigenous field worker sampling, snowball sampling, and time-location sampling strategies (Marpsat & Razafindratsima, 2010; Shaghaghi et al., 2011; Sydor, 2013; Tourangeau et al., 2014) were used to identify and conveniently recruit street-connected adolescents aged between 13 and 25 years to respond to the survey.

The primary researcher obtained a list of government approved charities[20] working with street-connected children and youth within the Greater Accra region, and a copy of the report on the latest street children and youth census conducted by the Department of Social Welfare and collaborating organisations (DSW et al., 2011) from the Head Office of the Department of Social Welfare, Ministry of Gender, Children and Social Protection, in Accra. Among other information, the census report provides a list of specific street census enumeration areas within the region where street-connected children and youth are located (DSW et al., 2011).

3.2.5.2.3.1. Facility-based sampling

Facility-based sampling involves recruiting participants of a hard-to-reach population from various facilities frequented by the target participants including charities, sexually transmitted diseases clinics, drug treatment centres, among others (Lee, Wagner, Valliant & Heeringa, 2014; Magnani, Sabin, Saidel & Heckathorn, 2005; Shaghaghi, et al., 2011). Four charity organisations working with street-connected children and youth within the Greater Accra region were identified from the list obtained from the Department of Social Welfare: Street Academy, Catholic Action for Street Children, Chance for Children, and Street Children Empowerment Foundation. The primary researcher met individually with the heads of these charities to discuss the purpose and procedure of the study and presented a letter (Appendix 3.12) to each head asking for their permission to access and conduct the study with street-connected adolescents who attended their facility. All the four charities contacted permitted the study to be conducted in their facilities.

[20] The services charities provide to street-connected children and youth in the Greater Accra region are highlighted in Chapter 1 (Section 1.2.6.4.8.2) of this thesis.

All the four charities operate on Mondays through Fridays; they are closed on Saturdays and Sundays. To build rapport and gain the trust of potential participants, the research team (i.e., the primary researcher and the three fieldwork assistants) arranged with the management of the selected charities to volunteer for one day at each charity's drop-in sessions. Specifically, the research team took part in school work and recreational activities in order to build familiarity with the street-involved adolescents who attended. After the day of voluntary work, the research team gathered all adolescents aged between 13 and 25 years who attended the facility in one room[21] and informed them about the study. The same procedure as followed during the school survey was used in the charity facilities. However, in the charity facility, the information session and the general interaction with the potential participants was held in the Ga and the Twi languages. During the question and answer session, the potential participants indicated that, from time to time people come to them at the charity facility to interview them for research purposes, but they never receive anything in return. Interestingly, this concern – "what's in it for us?" – was raised by the potential participants across all the four charity facilities included in this study. The research team expected this concern, hence, we provided two responses, that: 1) on the day of the survey each participant would receive a snack voucher worth GH¢ 5[22] (five Ghanaian Cedis) as compensation for their time spent participating in the survey, 2) the full benefit of the study for street-connected young people is rather in the long-term, when the appropriate resource-authorities (including the Ministry of Gender, Children and Social Protection, the Department of Social Welfare [DSW], the Mental Health Authority, and the Ministry of Education [MoE]) would consider the findings and recommendations of the study and implement them for the well-being of street-connected young people in Ghana. Within the short-term, the findings and recommendations of the study would inform the work of charity organisations and street social workers concerned with the well-being of street-connected young people in the Greater Accra region[23].

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[21] At each charity facility, depending on which was available, a room designated for classroom work or recreation or library was used for the potential participant information session.

[22] As at the time of the data collection, GH¢5 was equivalent to approximately £1.

[23] At the end of the study, the primary researcher would provide factsheets on the key findings and recommendations to each participating institution (i.e., charity organisations and schools) and the authorities that permitted the study (i.e., The Greater Accra

The research team then gave the participant information sheet (Appendix 3.6) and an informed consent form (Appendix 3.7) to each interested and willing participant who could read and understand English. Also, each potential participant aged less than 18 years received two copies of a letter for consent to parents/guardians (Appendix 3.8) and a consent form to parent/guardian requesting the consent of parents/guardians for the adolescent's participation in the study (Appendix 3.9). Where an interested potential participant less than 18 years lived alone without an adult primary caretaker, the head of the charity facility gave their consent for the participant. As observed during the survey in the selected schools, the street-connected participants were also asked to return the signed consent forms (i.e., their individual copies and those sent to their parents/guardians) after three days, when the survey would take place at the charity facility.

3.2.5.2.3.2. Sampling within street census enumeration areas

The Department of Social Welfare and collaborating organisations (DSW et al., 2011) provide seven zones within the Greater Accra region where street-children and youth can be found: Accra metropolitan area, Amasaman, Ashaiman, Dangbe West, Ledzokuku-Krowor Municipal area, Madina, and Tema Metropolitan area. As shown in Table 3.2, each of the zones has a specific area or areas where street-children and youth work, congregate or sleep. The Accra metropolitan area has the highest number of zones (i.e., four Zones: A, B, C, and D) covering 59 specific areas where street-children and youth are located.

The indigenous field worker sampling, snowball sampling, and time-location sampling techniques were used to access and recruit street-connected adolescents for this study within the selected street census enumeration areas. For the Accra Metropolitan area, names of all specific locations within each street census enumeration zone were entered into the Random Order Generator tool (Endmemo, 2016) for random selection of areas to access street-connected adolescents. The eligible areas were picked consecutively beginning from the top of the generated list (Appendix 3.13).

As shown in Table 3.2, three street census enumeration areas were randomly selected from Zone A, and 10 areas were selected from Zone C, within the Accra Metropolitan area. However, all the areas in each of Zones E, F, G, H, I, and J were selected for this study. The number of areas selected from each street

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Regional Head Office of the Ghana Education Service, and the Department of Social Welfare, National Head Office, Accra).

census enumeration zone within the Accra Metropolitan area was mainly informed by evidence from the Department of Social Welfare (DSW et al., 2011), suggestions by street social workers at the selected charity facilities and by key street-connected youth informants contacted regarding the zones where street adolescents often congregated and were more concentrated. In all, 35 out of the 67 specific street census enumeration areas were selected for the survey of street-connected adolescents in this study (Table 3.2).

Table 3.2. Street census enumeration zones within the Greater Accra region

Zone	Areas	Total Areas	Number of areas selected for study
Accra Metropolitan Area:			
A	Agbogbloshie, Konkomba, CMB, June 4th, Railways, and Kantamanto.	6	3
B	Okaishie, Kingsway, UTC, Tudu, Novotel, Diamond House, New Tema Station, Old Tema station, Labour office, National Theatre, Total House, TUC, Cathedral, Regional Administration/Accra City Campus, and Makola.	15	8
C	Kaneshie station, Old Odaw river, Soldier bar, Freedom Garden, Newtown, Nima, Mamobi, Neoplan station, Mallam Atta market, Ghana Telecom, Ebony restaurant, Ray Power Video, Orion Cinema, Railway lines, Odaw KVIP, Odaw lorry station, GCB Towers, Blow-up, Nima lorry station, Tiptoe area, and PTC/Wakiki.	21	6
D	Akutu Junction, First Light, Police station area, Coldstore, Public toilet, Kaneshie post office, Frytol, Roadside/Overhead, Kaneshie market, Tokoradi station, Aseda pharmacy, The Looks, Bubuashie, and north Kaneshie, Dansoman, Odorkor, and Kasoa.	17	10
Ga West Municipal Area:			
E	Amasaman market and central station area.	1	1
Ashaiman Municipal Area:			
F	Ashaiman market and central station area.	1	1
Dangbe West Municipal Area:			
G	Dangbe West market and central station area.	1	1
Ledzokuku-Krowor Municipal area:			
H	Teshie and Nungua market and central station areas.	2	2
La-Nkwantanang-Madina Municipal area:			
I	Madina market and central station area.	1	1
Tema Metropolitan area:		1	1
J	Tema market and central station area.	1	1
	Total	67	35

Note:
List of zones and areas in Table 3.2 were extracted from DSW et al. (2011, pp.16–17).

3.2.5.2.3.2.1. Indigenous field worker sampling

In this strategy a researcher engages a local fieldworker who has privileged access to the target participants of the study and can help identify persons they know within the target location to be recruited into the study (Platt et al., 2006; Shaghaghi et al., 2011). In the present study, the research team engaged and collaborated with street social workers – who were employees of the selected charity organisations in this study – to help access street-connected adolescents located within the selected street census enumeration areas for this study. In all, the research team collaborated with four street social workers who worked with street-connected children and young people (and in some cases with their families on the street) across all the 10 zones mapped out for this survey.

On each day of the survey, each street social worker paired up with a member of the research team and guided them to a specific selected street census enumeration area, introduced them to available potential participants and the research team member administered the survey to each of the participants. This working collaboration between the research team and the street social workers thus proved useful, as it helped in easy identification of participants; but more importantly, facilitated easy establishment of trust and rapport between the research team member and potential participants.

3.2.5.2.3.2.2. Time-location sampling

In this sampling technique, a researcher maps out the specific times when members of the hard-to-reach population congregate or gather at certain locations and recruits them for the study (Magnani et al., 2005; Marpsat & Razafindratsima, 2010). Street-connected children and youth in the Greater Accra region often gather at three main locations in the daytime on Sundays, when they are not working: open market sheds, passenger waiting areas at bus stations, and parks within slums. In this study, the social workers engaged to facilitate the indigenous field worker sampling process were available only from Mondays through Fridays. Therefore, four key street-connected youth informants were recruited during the indigenous field worker sampling to facilitate the time-location sampling process on Sundays (when the social workers were unavailable).

The research team split into two, each team made up of a male and a female. Each research team pair collaborated with a key street-connected youth informant at a time. The key street-connected youth informant guided the pair research team to specific market locations, bus stations, and parks within slums; they told the pair research team places they should pass and persons they should

talk to. Thus, the time-location sampling process allowed the research team to access street-connected adolescents who were not accessible during the working week; the collaboration with the key street-connected youth informants in this regard was also helpful in establishing trust between the research team and the informant, even though it is possible that the involvement of the key street-connected youth informants might have also biased the sampling towards recruiting friends and familiar participants and masking street-connected adolescents who were not within their networks.

3.2.5.2.3.2.3. Snowball sampling

In snowball sampling, an initially identified participant is asked to provide information on other members of the population or facilitate the recruitment of other members of the group (Magnani et al., 2005; Marpsat & Razafindratsima, 2010; Shaghaghi et al., 2011). This strategy was employed alongside the other techniques. In other words, each participant accessed or recruited through facility-based sampling, indigenous field worker sampling or time-location sampling was requested to nominate and facilitate introductions to other street-connected adolescents whom they might know based on the interpersonal or social connections between them. For instance, at the charity facilities, some participants – who had responded to the survey – came in the next day with other friends to also participate. All the informants who brought other participants to the charities, subsequent to their own participation, were given refreshments for their efforts.

3.2.5.2.4. Administration of the survey to street-connected adolescents

Due to the varied and relatively poor literacy levels reported among street-connected children and youth in the Greater Accra region (Asante 2015b; Quarshie, 2011) the survey of the street-connected adolescents was planned to be both self-administered and researcher-administered. This was to ensure that the difficulty of reading, understanding and responding to written information experienced by some street-connected adolescents does not militate against the “correct” completion of the questionnaire. After taking the participants through the general overview of the questions and the instructions for answering, each participant was asked to choose which option they were comfortable with: self-administered or researcher-administered. All the participants opted for the researcher-administered procedure. Participants who could even read and write indicated that they would be very slow at the self-administered option, and they had less time to spend on participating in the survey. Street-connected adolescents who had had experience of participating in previous street-connected population research mentioned that they were

comfortable with the researcher-administered procedure as it afforded them the chance to provide explanations to the researcher where response options offered on the questionnaire were limited, imprecise, or not meaningful.

At the charity facilities, each member of the research team administered the questionnaire one-to-one to the participants in separate rooms (Appendix 3.14 shows examples of photographs taken during the survey in the charity facilities). However, depending on availability, convenience, and safety, various venues were used for the survey administration within the street census enumeration areas. These included quiet street corners, silent locations within markets and restaurants, open sitting areas near parks and cinemas, nearby clinics, and community centres. Consistent with the procedure in the school survey, prior to the administration of the survey to each street-connected adolescent, the researcher explained the content of the participant information packet and emphasised the meaning of self-harm as applied in the study to each participant. As indicated earlier, the survey with the street-connected adolescents was carried out mainly in Ga and Twi; a few girls (who were junior high school graduates) opted for the questions to be read out to them in formal English exactly as used in the construction of the survey questionnaire (Appendix 3.1), while some boys preferred the survey in Ghanaian Pidgin English.

The survey with the street-connected adolescents took place during July and September 2017. On average, the survey with the street-connected adolescents lasted between 22 and 25 minutes. In all, the research team accessed 63 street-connected adolescents at the four charities, while 433 participants were identified and approached within the selected street census enumeration areas (see Figure 3.4). Thus, the research team approached a total of 496 street-connected adolescents for this survey, but excluded 103 for various reasons. For example (as shown in Figure 3.4), 21 of the potential participants approached in the street census enumeration areas were unavailable to participate due to work time constraints. These were young people who worked for other people and risked losing their jobs if they turned up late. Also, the research team found 49 of the potential participants visibly ill. The research team, together with the street social workers anticipated this situation, as the survey was taking place during the wet season in Ghana – a period when the Greater Accra region is characterised by perennial rainfall coupled with floods (in certain areas) and the outbreak of malaria and cholera. Street-connected populations and other people without proper shelter become particularly vulnerable during this period. Of these 49, the research team (with the guidance of the street social workers) arranged for five adolescent

independent migrants to be taken to the hospital for proper medical attention, as their health situation appeared poor.

The medical bills were covered by the NHIS. Furthermore, the research team was unable to complete significant portions of three questionnaires because street fights erupted near the location of the survey. The research team and the participants had to end the survey and move away from the scene to safety; in another instance, the survey ended abruptly because the participant – a teenage mother – had to attend to her injured baby. In all, 384 answered questionnaires from the street-connected survey were included in the final analysis of this study (see Figure 3.4).

It must be noted that due to the highly mobile nature of street-connected young people, the interested participants accessed within the street census enumeration areas responded to the survey on the same day, after they had given their consent. The social workers consented for the participants aged less than 18 years old whose parents/guardians were unavailable. Across the charity facilities and the street census enumeration areas, 496 street-connected adolescents were approached and invited to participate in this survey, but 384 responded to the survey. This represents a response rate of 77.4%.

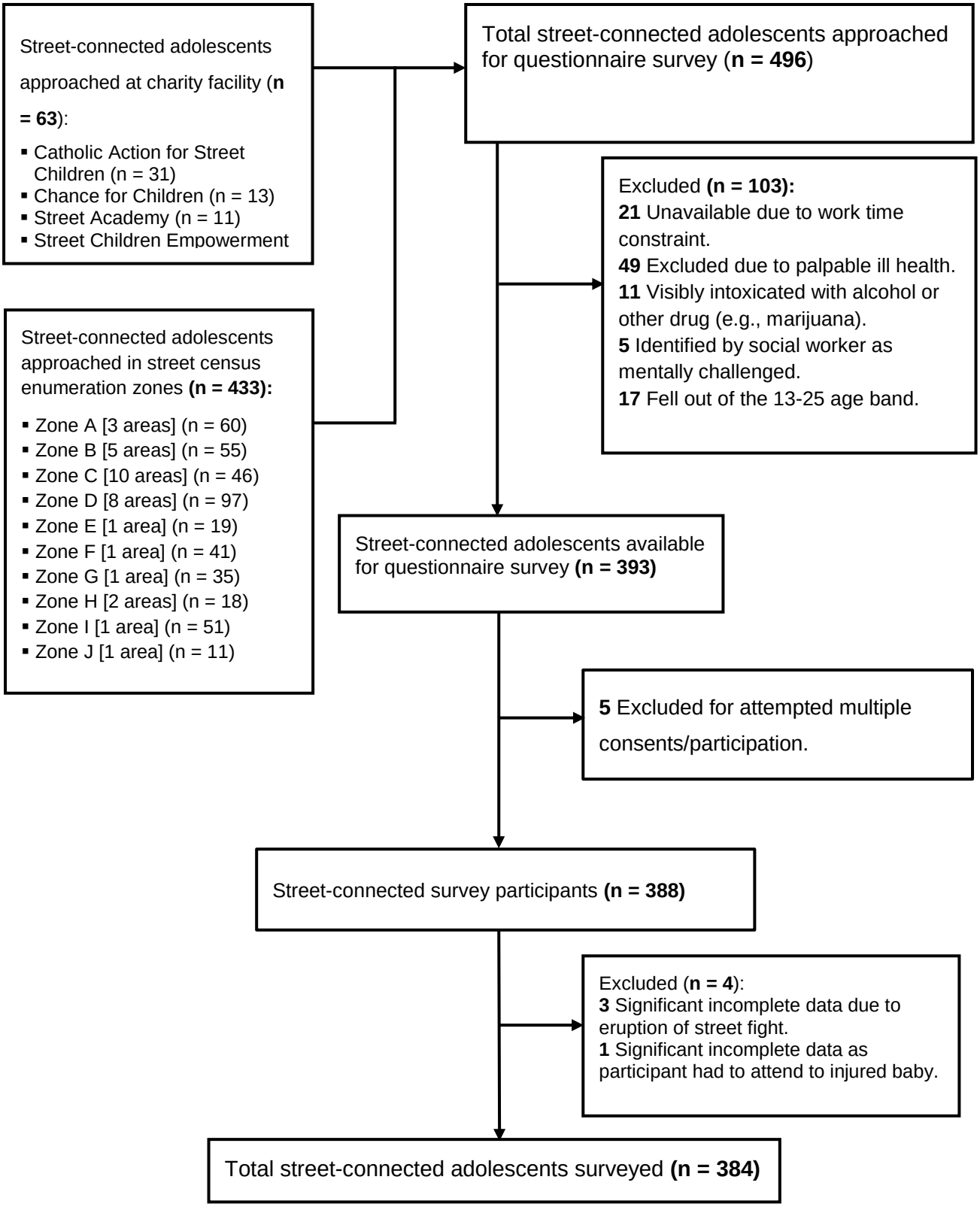

Figure 3.4: Summary of participant recruitment process for street-connected questionnaire survey

3.2.5.2.5. Safety and risk reduction steps during survey at street census enumeration areas.

As required by the Fieldwork Risk Assessment regulations of the University of Leeds, the primary researcher carried out pre-fieldwork preparation involving risk assessment and basic safety procedures aimed at protecting the participants, the research team, and the data. Research with street-connected young people (and other homeless populations in general) can be associated with some degree of increased risks, as there is alcohol, drug and other substance use in this population (Aptekar & Stoeklin, 2014; Third, 2000). Regarding the recruitment and involvement of participants within the street census enumeration areas, the pre-fieldwork risk assessment was guided by the advice of Third (2000, p.457) that “researchers should exercise common sense, but also have to show some trust and perhaps take some (calculated) risks in order to show respect for the respondent, and thus do justice to the research”.

In this study, the survey and interviews with the street-connected adolescents were conducted early in the day – when participants may have a calm demeanour and mental state, and the street atmosphere is generally calm. The research team met (together with the street social workers or key street-connected adolescent informants) in the morning to map out locations of specific street census enumeration areas, identified exit points, safe routes, and nearby safety places (including police stations). The research team then split into pairs, with each pair accompanied by a street social worker or a key street-connected adolescent informant to the designated street locations for the survey. Each member of a pair of researchers ensured that they were never out of the sight (or where possible, earshot) of their partner.

Again, generally, the street environment where young people live within the Greater Accra region can be somewhat volatile, as physical fights are commonplace. Consistent with the primary researcher’s experience with street-connected children and youth in the region, there is no documented evidence in Ghana that muggings or any direct physical attack on researchers or social workers exists. However, physical fights – involving the use of offensive weapons such as knives and clubs, and pelting with stones and other objects – can sometimes erupt between street gangs within the immediate environment of an on-going research activity. In instances of street fights, the research team ended (or where feasible re-scheduled) an on-going survey or interview with participants and moved away from that location. Similarly, in instances where the research team felt threatened or something felt amiss within the immediate environment, they ended the survey

interview and left the location. To further protect all involved and data collection, the primary researcher provided each member of the research team (including the street social workers and key street-connected adolescent informants) with top-up credit for their mobile phones and strictly instructed them to call the primary researcher at three agreed times during the period of the survey on each day. Members of the research team displayed no valuables (such as wallet, money, or mobile phone not in use etc.); they used backpacks secured on the waist to carry the questionnaires.

It is worth acknowledging that some of these safety measures were also recommended by the street social workers during the fieldwork. For instance, at one of charity facilities, a street social worker alerted the research team to the language of stealing as used by the street children and youth who attended the drop-in sessions. They use the term “sharing” to mean stealing the valuable (e.g., mobile phone, digital camera, or money) of a volunteer who carelessly displays it or leaves it unattended. The explanation is that, the volunteer has displayed the valuable or left it unattended because they want to share it with a poor street-connected child. So, a child who has stolen such a valuable would say, “a volunteer shared it”. This meant that volunteers and researchers alike who visit the facility had to keep all valuables not in use away and never leave their valuables unattended.

3.2.6. Data Analysis Plan and Procedure

The primary researcher consulted a Biostatistician in Applied Health Research at the Leeds Institute of Health Sciences, University of Leeds, for expert advice on strategies to adopt in the statistical modelling of the survey data. Additionally, the primary researcher consulted a few key statistical analysis manuals and textbooks (i.e., Agresti, 2013; Field, 2016; Finch, Bolin & Kelley, 2014; Fleiss, Levin & Paik, 2003; Hilbe, 2011; Hox, 2010; Kaufman & Rousseeuw, 2005; Pallant, 2013; Tabachnick & Fidell, 2013). The primary researcher inspected each collected questionnaire for completeness.

3.2.6.1. Coding and re-coding of data

Following the inspection of the answered questionnaires for completeness, the primary researcher first entered all the data into Microsoft Excel 2010 in order to re-code all textual responses into numerical data. The textual parts of the data were the participants’ responses to the open-ended “other” categories. For example, other methods of self-harm used, other reasons for last episode of self-harm. Summative content analysis (Hsieh & Shannon, 2005) was used to identify and

quantify the usage of certain words in the open-ended responses of the participants. For instance, in response to the other category under reasons for last episode of self-harm, a participant wrote that, “I don’t know why I did it, it was the work of the devil”. This response was summed as “It was the work of the devil” and coded 1. Again, in response to other methods of self-harm used, a participant said, “Because my mom kept on calling me a prostitute, which I was not, I went about having sex with any man at all, I didn’t care if I got HIV/AIDS and died”. This response was summed as “indiscriminate unprotected sex” and coded 1. After quantifying all the textual components of the data, the data corpus was exported from Microsoft Excel to the Statistical Package for the Social Sciences (SPSS, version 22.0 for Windows – IBM SPSS, Inc., Chicago, IL, USA) for further inspection and screening of the data – for normality of data, missing data, and sparse data bias (Greenland, Mansournia & Altman, 2016; Pallant, 2013). Initial descriptive analyses were run in SPSS for all the included variables. Inspection of this initial descriptive statistics necessitated collapsing or re-grouping of some response categories, while some response items were excluded altogether from further analysis.

Specific reasons for re-grouping or excluding some response categories were as follows. Some response categories with few participants were collapsed into one category because, essentially, they had the same meaning (in practice). For instance, under “primary caregiver’s employment status”, the response categories “self-employed” and “employed” were collapsed into “employed” as both responses essentially mean a person is employed; “unemployed”, and “retired” were also collapsed into “unemployed” as the responses essentially refer to a state of unemployment. However, some synonymous response categories with very few participants (insufficient cell size, ≤ 10) were excluded from further analysis because there were still very few participants even after collapsing them into dichotomous response categories. For example (as shown in Appendix 3.15), under “Religious group” the response options “African traditional religion” and “other” were excluded from further analysis due to insufficient cell size. Again, some of the response items were dichotomised based on contextual evidence in Ghana. For example, “sib size” was dichotomised into “0 – 4 siblings vs. less than 4 siblings” based on evidence by the Ghana Statistical Service (2015) that the fertility rate in Ghana is 4.2 children and the average household size is 3.5 persons. Similarly, “Illicit drug used in the past year” was dichotomised (into “never take illicit drugs” vs. “took illicit drug”) for two reasons: 1) only a few participants selected from the list of illicit drugs on the questionnaire, and 2) all the illicit drugs listed as response

options on the questionnaire are illegal, under the narcotic and drugs law of Ghana (Act 236, 1990). Generally, the primary researcher coded and re-coded the included outcome variables and exposure variables in this survey as follows.

3.2.6.2. Outcome variables

There were three outcome variables in this survey: “lifetime self-harm”, “self-harm during the past 12 months”, and “self-harm episodes in the past 12 months”. Lifetime self-harm was assessed with the question, “Have you actually ever intentionally harmed yourself? (e.g., cutting, burning, or poisoning yourself, or tried to harm yourself in some other way, for example, hanging, jumping from height etc.?)”, while self-harm during the past 12 months was measured with the question, “Did you actually intentionally harm yourself during the past 12 months or 1 year?”. The response options for lifetime self-harm and self-harm during the past 12 months were binary: “No” (coded 0) or “Yes” (coded 1). Self-harm episodes in the past 12 months was measured with the question, “How many times did you intentionally harm yourself during the past 12 months or 1 year?”, with participants required to indicate their best estimate of the number of times they self-harmed during the period (this was coded continuously, from 0 to 25 times).

3.2.6.3. Exposure variables

As shown in Appendix 3.15, two main categories of exposure variables were included in this survey: socio-demographic factors (e.g., adolescent groups, gender, age, religious group, etc.), and negative events that occurred during the past 12 months, related to personal level and lifestyle factors (e.g., sexual orientation worries, cigarettes and alcohol use, illicit drug use, etc.), family factors (e.g., conflict with parents, family member suicide, etc.), school factors (e.g., school work problems, truancy, etc.), and interpersonal variables (including conflict with friends, friend suicide, bullying victimisation, physical and sexual abuse, etc.).

There were 21 socio-demographic variables, with varying response options. However due to the reasons outlined above, the majority were re-coded into dichotomous variables (see Appendix 3.15). For example, “employment status”, “sexual orientation” “cigarettes smoked weekly”, “weekly alcoholic drinks” were dichotomised. Whereas the response options of “gender” (male or female) remained unchanged, “age” was categorised into three groups: “13-15-years”, “16-17 years”, and “18-21 years”. Overall, the self-reported ages of the participants in this study ranged from 13 to 21 years. The grouping of age was informed by the fact that, in Ghana, persons aged 16 years and above can give sexual consent (Act 29, 1960), whereas persons aged 18 and above are legally considered as adults

who qualify to vote during national elections. Thus, ages 15 and 17 were used as cut-off points for the grouping of age. As noted in Appendix 3.15, there were four street-specific socio-demographic variables, which were dichotomised: “street life age” (measured with the item, “How long have you been living in this area?”), “still have contact with family” (assessed with the question,” Do you still have contact with your family?”), “still in school” (measured with the question, “Do you still go to school?”) and “educational background” (measured with the item, “What is your highest educational background?”).

In contrast, the response options for the majority of the negative life events experienced during the past 12 months were dichotomous: “No” or “Yes”, coded 0 (No) and 1 (Yes). In all, there were 24 negative events included in this study (Appendix 3.16). It is well documented that self-harm in adolescents is often triggered by the combination of multiple negative life events (e.g., Hawton et al., 2012; Liu et al., 2019; Paul, 2018), hence an additional variable, “total negative life events” was created by taking the sum of all individual negative life events endorsed by each participant to obtain an index of the total negative life events experienced during the past year. The total negative life events endorsed by the participants ranged from 0 to 22; this was further placed into three categories: ≤ 5 negative events (coded 0), 6 – 10 negative events (coded 1), and > 10 negative events (coded 2). Finally, due to insufficient cell size, the responses options of “truancy” was dichotomised: 0 – 5 days = 0, and **>** 5 days = 1 (Appendix 3.15).

3.2.6.4. Missing Data

The problem of missing data is almost inevitable in surveys and field experiments, with implications for research conclusions if not addressed at the data analysis stage (Cox et al., 2014; Graham, 2009, 2012). In the present survey, missing data were less than 5% (i.e., between 0.01% – 0.1%) of observations in respect of variables with missing data. Therefore, in order to reduce the biases associated with eliminating participants with incomplete responses/nonresponses, the listwise deletion approach (also called complete-case analysis) was used, as biases and loss of power in this approach are both likely to be inconsequential in this study, particularly, for the regression models (Acock, 2005; Allison, 2002; Graham, 2009, 2012; Tabachnick & Fidell, 2013). In the listwise deletion approach to handling missing data, only cases with complete data are included in the analysis; cases with one or more missing values are omitted from the analysis or computations (Enders, 2010; Graham, 2009; von Hippel, 2004).

3.2.6.5. Statistical tools and analysis procedure

As found commonly with larger datasets (Ghasemi & Zahediasl, 2012; Öztuna, Elhan & Tüccar, 2006; Pallant, 2013), the test for normality of the data of the present study indicated non-normal distribution of the variables; visual inspection of relevant plots and the Kolmogorov-Smirnov statistic across key variables indicated non-normal distribution ($p < 0.05$). Following the screening and re-coding of the data corpus, the main statistical analyses proceeded in five steps to address the aims/research questions of this survey: univariate analysis; bivariate analysis; single-level multivariate analyses, multi-level multivariate analyses, and cluster analysis. The analyses were performed in SPSS (version 22.0 for Windows) and the R Statistical Package (version 3.5.2 for Windows).

Step 1. Univariate analysis: Frequencies and proportions were used to explore the distribution of the socio-demographic variables within the data. To address research questions 1, 2, and 3, univariate analysis was performed. This involved the use of cross-tabulations with 95% confidence intervals (CI) across adolescent groups, gender, and age groups. All prevalence estimates were computed as proportions of the whole population and as proportions of the respective sub-group sample sizes (i.e., in-school and street-connected). Similarly, the predominant methods of self-harm used (e.g., self-injury and self-poisoning) and the stated reasons for self-harm were ascertained in terms of proportions.

Step 2. Bivariate analysis: This involves the analysis of the relationship between two variables (Tabachnick & Fidell, 2013). Given the categorical nature of the data and level of measurement being nominal, the Pearson's Chi-squared test (χ^2) was used to explore the relationships between the exposure variables (i.e., socio-demographics and negative events during the past 12 months) and the outcome variable (i.e., self-harm during the past 12-months). Pearson's Chi-squared test reveals the relationship between two categorical variables (Field, 2016; Howell, 2017; McHugh, 2013). Exposure variables with sufficient expected cell counts (≥ 5) and not less than an expected cell size of one in at least 80% of the cells were included in the Chi-squared tests (Cochran, 1954; Delucchi, 1993; Greenland et al., 2016; McHugh, 2013). Fisher's exact test was used where the contingency tables had cells with expected frequencies lower than five (Fisher, 1925; Kim, 2017).

Step 3. Single-level multivariate analyses: To address research question 4, multivariate analysis tools were used to build models aimed at examining the possible associations between the exposure variables (i.e., socio-demographics, and negative events during the past 12 months) and the outcome variables (i.e.,

self-harm during the past 12 months, and the frequency/counts of self-harm in the past 12 months). Specifically, to assess the associations between the individual level exposure variables and self-harm (repetition) during the past 12 months, binary logistic regression and negative binomial regression analyses were performed.

- Binary logistic regression – This is suited for describing the individual-level association between one or a set of predictor variables that may be continuous, categorical or a combination of the two and a categorical (binary) outcome variable (Agresti, 2013; Peng & So, 2002; Tabachnick & Fidell, 2013).
- Negative binomial regression – This test is used for describing the individual-level association between one or a set of predictor variables that may be continuous, categorical or a combination of the two and a count outcome variable that is overdispersed with a variance greater than its mean (Finch et al., 2014; Hilbe, 2011; Hox, 2010).

Step 4. Multi-level multivariate analyses: As with single-level modelling strategies in general, the two single-level models presented (i.e., binary logistic regression and negative binomial regression) consider the units of analysis as independent observations (Hox, 2010). A challenge with single-level models is thus related to the failure to account for data nested within clusters (Stapleton, McNeish & Yang, 2016). The implication is that statistical significance is likely to be overstated, as standard errors of the regression coefficients are underestimated in single-level models (Rabe-Hesketh & Skrondal, 2006; Stapleton et al., 2016). In the present study, the data were nested. The in-school adolescents were nested within classrooms, their classrooms were nested within schools, and their schools were nested within the 10 districts of the Greater Accra region. Similarly, the street-connected adolescents lived in different locations in the region and some were nested within the charity facilities they attended.

Therefore, further to addressing research question 4 – the question related to the association between self-harm (repetition) and the contexts (i.e., school and street) where the adolescents were found, two multi-level modelling techniques were used: multi-level logistic regression and multi-level negative binomial regression.

- Multi-level logistic regression – This test reveals the association between contextual and individual level predictor variables, and a categorical (binary) outcome variable (Finch et al., 2014; Hox, 2010).

- Multi-level negative binomial regression – This test describes the association between contextual and individual level predictor variables and a count outcome variable that is overdispersed with a variance greater than its mean (Finch et al., 2014; Hilbe, 2011; Hox, 2010).

Notably, individual exposure variables were included in all the multivariate models regardless of their statistically significant bivariate relationships (in Step 2) with the outcome variable. No pre-selection of candidate exposure variables for inclusion in the multivariable models was done in this study for two reasons: 1) the exclusion of exposure variables from multivariable modelling based on their statistically significant bivariate relationship with the outcome variable leads to increased risk of overfitting, and 2) an exposure variable in isolation can behave totally differently in relation to the outcome variable in a bivariate relationship, but when they are included simultaneously with other exposure variables in a multivariable model, they can become important (Babyak, 2004; Harrell, Lee & Mark, 1996; Linsell, Malouf, Morris, Kurinczuk & Marlow, 2017; Steyerberg et al., 2018; Sun, Shook & Kay, 1996).

"Self-harm during the past 12 months" was the outcome variable in the binary logistic regression, and multi-level logistic regression analyses, whereas "frequency of self-harm during the past 12 months" was the outcome variable in the negative binomial regression, and multi-level negative binomial regression analyses. In the binary logistic regression and multi-level logistic regression analyses (Agresti, 2013; Finch et al., 2014), the outcome variable (self-harm during the past 12 months) had two categorical response options: "No" (coded 0) or "Yes" (coded 1). The results of the binary logistic regression, and multi-level logistic regression analyses performed were presented as odds ratios (OR) with their 95% CIs (Peng & So, 2002).

Negative binomial regression and multi-level negative binomial regression analyses (Cohen, Cohen, West & Aiken, 2003; Finch et al., 2014; Hilbe, 2011; Hox, 2010) were chosen because the outcome variable (frequency/counts of self-harm during the past 12 months) was overdispersed, with inflated zeros – higher than the mean of the counts within the distribution. Over 80% of the participants in the overall sample of this study reported no self-harm during the past 12 months, a situation which satisfies the key assumption of negative binomial regression (Cohen et al., 2003; Finch et al., 2014; Hilbe, 2011; Hox, 2010). The results of the negative binomial regression, and multi-level negative binomial regression analyses were presented as incidence rates ratios (IRR) with their 95% CIs.

In the present study, the data from the school sample (81.8%) was larger than the street-connected data (18.2%), a situation which might skew the multivariable modelling results to be more applicable to the in-school adolescent sample. Also, as shown in the findings of the systematic review of this thesis (Chapter 2) the factors associated with self-harm in street-connected adolescents is under-researched, compared to in-school adolescents across sub-Saharan Africa. Against these reasons, in addition to the multivariable analyses of the overall data, the data was split by adolescent groups (in-school and street-connected) to examine the school-specific and street-specific exposure variables associated with the outcome variables (self-harm during the past 12 months and frequency/counts of self-harm during the past 12 months) in the binary logistic regression and negative binomial regression modelling.

For each analysis (apart from the univariates), a two-tailed p-value of less than 0.05 was taken as statistically significant. As recommended for public health research and studies of clinical importance, the statistical significance testing (using the $p<0.05$ threshold) was complemented by the use of confidence intervals (CIs) in the interpretation of the findings of the multivariable modelling, as CIs provide more information about the direction, precision and magnitude of the difference or association estimated (Sterne & Smith, 2001; Sullivan & Feinn, 2012). Thus, given the public health importance of self-harm as the single strongest risk for suicide in adolescents (Hawton et al., 2012), regardless of the statistical significance of a model or a factor in a model, the observed odds ratios (OR) and incidence rates ratios (IRR) with their respective 95% CIs were also examined for evidence on the potential public health importance or clinically significant associations observed (Greenland et al., 2016; Schober, Bossers & Schwarte, 2018; Sullivan & Feinn, 2012).

Step 5. Cluster analysis was performed to address research question 5. Cluster analysis identifies groups in data (Kaufman & Rousseeuw, 2005). In the present study, cluster analysis was performed to identify groups of adolescents with similar characteristics in the data, in terms of risk for self-harm. Model-based[24] and non-model-based clustering algorithms, where each cluster is described by a density function (Banfield & Raftery, 1993; Fraley & Raftery, 1998; Kaufman & Rousseeuw, 2005), were used to explore various cluster solutions in the R statistical package (version 3.5.2 for Windows) from very few simple 2-cluster

[24] In model-based clustering, it is assumed that the dataset of interest contains various clusters with different distributions (Akogul & Erisoglu, 2017).

solutions to a more complex 6-cluster arrangements. However, the model-based 3-cluster solution was considered for this study data, as it showed lowest Akaike Information Criterion (AIC),[25] compared to the other cluster solutions obtained (Akaike, 1974; Lin & Dayton, 1997; Vrieze, 2012). Lower AIC value suggests better model fit (Akaike, 1974; Lin & Dayton, 1997).

3.3. Results

Consistent with the order of the research questions of this survey (Section 3.1.1 above), the results were organised into five main sections: prevalence estimates of self-harm, methods of self-harm, stated reasons for last episode of self-harm, factors associated with self-harm, and clustering of adolescents. However, the presentation of the demographic and background characteristics of the participants precedes the presentation of the results of the main analysis as follows.

3.3.1. Demographic and Background Characteristics of Participants

In all, 2,424 adolescents were approached and invited to participate in this survey (see Figures 3.3 – 3.4). However, 2,107 completed questionnaires were included in the final analysis of this study, representing an overall response rate of 86.9%. Table 3.3 presents the distribution of the demographic and background characteristics of the participants in this study. Of the 2,107 participants, 81.8% (n=1,723) were adolescents in school, whereas 18.2% (n=384) were street-connected adolescents. There were slightly more female participants (50.9%; n= 1073) than males (49.1%; n=1034). The participants were aged between 13 and 21 years (mean = 16.81 years; standard deviation [SD] =1.33; modal age = 17 years), with the majority aged 16–17 years (57.4%; n=1210). The mean age of the adolescents in school was 16.91 (SD = 1.22; modal age = 17 years), while the mean age of the street-connected adolescents was 16.36 (SD = 1.67; modal age = 17 years).

Overall, the majority of the participants self-identified as Christian (86.9%), heterosexual (96.5%), unemployed (81.2%), and not in a romantic relationship (62.5%). Among the in-school adolescents, the majority were Christians (91.9%), heterosexuals (97.2%), unemployed (96.1%), and were not in a romantic relationship (62.2%). However, many street-connected adolescents self-identified

[25] The AIC asymptotically selects a model that minimises mean squared error of prediction, hence, minimises maximum plausible risk in fixed sample sizes (Vrieze, 2012).

as employed (86.4%), and Muslim (36.3%). Most of the adolescents aged 18–21 years (51.3%) reported being in a romantic relationship, while the majority of the adolescents aged 13–15 years (79.5%) and 16–17 years (64.8%) indicated that they were not in a romantic relationship at the time of the survey.

Similarly, most of the participants (68.8%) described their family structure as monogamous (i.e., their father had one wife). The majority of the adolescents in school reported that their father had one wife (74.5%) and they had at most four siblings (75.2%). However, the majority of the street-connected adolescents (57.0%) reported that their father had more than one wife and they had more than four siblings (53.9%).

Also, even though the majority of the participants (67.3%) indicated that they lived with one or both parents and were taken care of by either one or both parents (73.3%), nearly half of the street-connected adolescents (46.9%) reported that they lived alone or with another person and they endorsed “myself or other person” as their primary caretaker (56.3%). Most of the adolescents in school lived with one or both parents (77.3%) and indicated one or both parents as primary caretaker (84%).

Table 3.3. Demographic and background characteristics of participants

Characteristic	Overall n = 2107	Adolescent groups		Gender		Age groups (Mean = 16.81 years; SD =1.33)		
		In-school n = 1723	Street-connected n = 384	Male n = 1034	Female n = 1073	13-15 n = 312	16-17 n = 1210	18-21 n = 585
	N (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Adolescent groups								
In-school	1723 (81.8)	1723 (100)	–	838 (81.0)	885 (82.5)	186 (59.6)	1060 (87.6)	477 (81.5)
Street-connected	384 (18.2)	–	348 (100)	196 (19.0)	188 (17.5)	126 (40.4)	150 (12.4)	108 (18.5)
Gender:								
Male	1034 (49.1)	838 (48.6)	196 (51.0)	1034 (100)	–	164 (52.6)	576 (47.6)	294 (50.3)
Female	1073 (50.9)	885 (51.4)	188 (49.0)	–	1073 (100)	148 (47.4)	634 (52.4)	291 (49.7)
Age groups:								
13-15 years	312 (14.8)	186 (10.8)	126 (32.8)	164 (15.9)	148 (13.8)	312(100)	–	–
16-17 years	1210 (57.4)	1060 (61.5)	150 (39.1)	576 (55.7)	634 (59.1)	–	1210 (100)	–
18-21 years	585 (27.8)	477 (27.7)	108 (28.1)	294 (28.4)	291 (27.1)	–	–	585 (100)
Mean age	16.81	16.91	16.36	16.79	16.83	14.71	16.55	18.48
SD	1.33	1.22	1.67	1.38	1.28	0.59	0.49	0.64
Sexual orientation:								
Heterosexual	2030 (96.5)	1672 (97.2)	358 (93.2)	1004 (97.2)	1026 (95.8)	305 (97.8)	1174 (97.0)	551 (94.7)
Non-heterosexual	74 (3.5)	48 (2.8)	26 (6.8)	29 (2.8)	45 (4.2)	7 (2.2)	36 (3.0)	31 (5.3)
In romantic relationship:								
No	1317 (62.5)	1078 (62.6)	239 (62.2)	699 (67.6)	618 (57.6)	248 (79.5)	784 (64.8)	285 (48.7)
Yes	790 (37.5)	645 (37.4)	145 (37.8)	335 (32.4)	455 (42.4)	64 (20.5)	426 (35.2)	300 (51.3)
Religious group:								
Christian	1811 (86.9)	1578 (91.9)	233 (63.7)	904 (88.6)	907 (85.3)	254 (83.0)	1055 (87.9)	502 (87.0)
Muslim	272 (13.1)	139 (8.1)	133 (36.3)	116 (11.4)	156 (14.7)	52 (17.0)	145 (12.1)	75 (13.0)
Employment status:								
Unemployed	1708 (81.2)	1656 (96.1)	52 (13.6)	825 (79.9)	883 (82.4)	208 (66.7)	1051 (87.0)	449 (76.9)
Employed	396 (18.8)	67 (3.9)	329 (86.4)	208 (20.1)	188 (17.6)	104 (33.3)	157 (13.0)	135 (23.1)

Table 3.3 (continued)

Characteristic	Overall n = 2107	Adolescent groups		Gender		Age groups (Mean = 16.81 years; SD =1.33)		
		In-school n = 1723	Street-connected n = 384	Male n = 1034	Female n = 1073	13-15 n = 312	16-17 n = 1210	18-21 n = 585
	N (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Family structure:								
Father has one wife	1448 (68.8)	1283 (74.5)	165 (43.0)	718 (69.5)	730 (68.0)	228 (73.1)	860 (71.1)	360 (61.5)
Father has more than one wife	658 (31.2)	439 (25.5)	219 (57.0)	315 (30.5)	343 (32.0)	84 (26.9)	349 (28.9)	225 (38.5)
Sib size:								
0 – 4 siblings	1472 (69.9)	1295 (75.2)	177 (46.1)	725 (70.1)	747 (69.6)	226 (72.4)	892 (73.7)	354 (60.5)
> 4 siblings	635 (30.1)	428 (24.8)	207 (53.9)	309 (29.9)	326 (30.4)	86 (27.6)	318 (26.3)	231 (39.5)
Living arrangement:								
Live with one or both parents	1419 (67.3)	1332 (77.3)	87 (22.7)	700 (67.7)	719 (67.0)	214 (68.6)	876 (72.4)	329 (56.2)
Live with other relative	414 (19.6)	297 (17.2)	117 (30.5)	199 (19.2)	215 (20.0)	55 (17.6)	219 (18.1)	140 (23.9)
Live alone or with other person	274 (13.0)	94 (5.5)	180 (46.9)	135 (13.1)	139 (13.0)	43 (13.8)	115 (9.5)	116 (19.8)
Street life age (street-connected only):								
6months – 1 year	181 (47.1)	–	181 (47.1)	87 (44.4)	94 (50.0)	66 (52.4)	68 (45.3)	47 (43.5)
> 1 year	203 (52.9)	–	203 (52.9)	109 (55.6)	94 (50.0)	60 (47.6)	82 (54.7)	61 (56.5)
Still have contact with family (street-connected only):								
No	81 (21.1)	–	81 (21.1)	43 (21.9)	38 (20.2)	17 (13.5)	35 (23.3)	29 (26.9)
Yes	303 (78.9)	–	303 (78.9)	153 (78.1)	150 (79.8)	109 (86.5)	115 (76.7)	79 (73.1)
Primary caretaker:								
One or both parents	1544 (73.3)	1447 (84.0)	97 (25.3)	768 (74.3)	776 (72.3)	232 (74.4)	966 (79.8)	346 (59.1)
Other relative	251 (11.9)	180 (10.4)	71 (18.5)	111 (10.7)	140 (13.0)	39 (12.5)	121 (10.0)	91 (15.6)
Myself or other person	312 (14.8)	96 (5.6)	216 (56.3)	155 (15.0)	157 (14.6)	41 (13.1)	123 (10.2)	148 (25.3)
Primary caretaker's employment status:								
Unemployed	178 (8.9)	125 (7.3)	53 (18.3)	81 (8.2)	97 (9.5)	24 (8.0)	76 (6.5)	78 (14.3)
Employed	1833 (91.1)	1597 (92.7)	236 (81.7)	906 (91.8)	927 (90.5)	275 (92.0)	1090 (93.5)	468 (85.7)

Table 3.3 (continued)

Characteristic	Overall n = 2107	Adolescent groups		Gender		Age groups (Mean = 16.81 years; SD =1.33)		
		In-school n = 1723	Street-connected n = 384	Male n = 1034	Female n = 1073	13-15 n = 312	16-17 n = 1210	18-21 n = 585
	N (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Educational background (street-connected only):								
No formal education	35 (9.1)	–	35 (9.1)	12 (6.1)	23 (12.2)	9 (7.1)	15 (10.0)	11 (10.2)
Primary or junior high school	349 (90.9)	–	349 (90.9)	184 (93.9)	165 (87.8)	117 (92.9)	135 (90.0)	97 (89.8)
Still in school (street-connected only):								
No	335 (15.9)	–	335 (87.2)	167 (85.2)	168 (89.4)	100 (79.4)	136 (90.7)	99 (91.7)
Yes	49 (12.8)	–	49 (12.8)	29 (14.8)	20 (10.6)	26 (20.6)	14 (9.3)	9 (8.3)
School residential status:								
Boarding	376 (21.2)	376 (21.8)	0	227 (26.2)	149 (16.5)	66 (31.1)	269 (25.0)	41 (8.4)
Day student	1396 (78.8)	1347 (78.2)	49 (100)	640 (73.8)	756 (83.5)	146 (68.9)	805 (75.0)	445 (91.6)
Weekly cigarettes smoked:								
Never/stopped	2051 (97.3)	1713 (99.4)	338 (88.0)	998 (96.5)	1053 (98.1)	300 (96.2)	1188 (98.2)	563 (96.2)
1 or more cigarettes	56 (2.7)	10 (0.6)	46 (12.0)	36 (3.5)	20 (1.9)	12 (3.8)	22 (1.8)	22 (3.8)
Weekly alcoholic drinks:								
Never drink	1741 (82.6)	1493 (86.7)	248 (64.6)	819 (79.2)	922 (85.9)	265 (84.9)	1033 (85.4)	443 (75.7)
1 or more drinks	366 (17.4)	230 (13.3)	136 (35.4)	215 (20.8)	151 (14.1)	47 (15.1)	177 (14.6)	142 (24.3)
Drugs used in the past year:								
Never take illicit drugs	1993 (94.6)	1677 (97.4)	316 (82.3)	964 (93.2)	1029 (96.0)	293 (93.9)	1158 (95.8)	542 (92.6)
Took illicit drug	113 (5.4)	45 (2.6)	68 (17.7)	70 (6.8)	43 (4.0)	19 (6.1)	51 (4.2)	43 (7.4)

Generally, most of the participants reported no alcohol (82.6%), cigarette (97.3%), or illicit drug use (94.6%). However, where reported, there were more street-connected adolescents, more males, and older participants who indicated the use of alcohol, cigarettes, or illicit drugs. For example, overall, 5.4% of the participants reported the use of illicit drugs during the previous 12 months. This represents 2.6% adolescents in school, 17.7% street-connected adolescents, 6.8% males, 4.0% females, 6.1% aged 13-15 years, 4.2% aged 16-17 years, and 7.4% aged 18-21years. Similarly, overall, 17.4% reported weekly use of alcohol, representing 13.3% adolescents in school, 35.4% street-connected adolescents, 20.8% males, 14.1% females, 15.1% aged 13-15years, 14.6% aged 16-17 years, and 24.3% aged 18-21 years.

The majority of the street-connected adolescents (52.9%) had been in the street situation for more than one year, still had contact with their family (78.9%), had primary or junior high school education (90.9%), but were not currently attending school (87.2%). The street-connected adolescents who were still attending school were all day students (100%). However, 21.8% of the in-school adolescents were boarding students, with the majority being day students (78.2%).

3.3.2. Prevalence Estimates of Self-harm

This section covers self-reported lifetime, 12-month, and 1-month prevalence estimates of self-harm, and age at onset of self-harm as follows.

Lifetime self-harm prevalence estimate: Table 3.4 shows the lifetime, 12-month, and 1-month prevalence estimates of self-harm as reported by the adolescents in this study. Overall, a lifetime history of self-harm was reported by 426 adolescents (20.2%, 95% CI: 0.19, 0.22). This was reported by 379 (22%; 95% CI: 0.20, 0.24) adolescents in school, and 47 (12.2%; 95% CI: 0.09, 0.15) street-connected adolescents. In terms of gender, lifetime self-harm was 16.3% (95% CI: 0.14, 0.18) among males and 24% (95% CI: 0.21, 0.26) among females. Regarding age groups, the prevalence estimate of lifetime self-harm was 16.3% (95% CI: 0.12, 0.20) among adolescents aged 13–15 years, 20.6% (95% CI: 0.18, 0.23) among adolescents aged 16–17 years, and 21.5% (95% CI: 0.18, 0.25) in adolescents aged 18–21 years.

Table 3.4. Prevalence of Self-harm

	Overall sample			School adolescent sample			Street-connected adolescent sample		
	Sample	Frequency	% (95% CI)	Sample	Frequency	% (95% CI)	Sample	Frequency	% (95% CI)
Lifetime self-harm	2107	426	20.2 (0.19, 0.22)	1723	379	22.0 (0.20, 0.24)	384	47	12.2 (0.09, 0.15)
Gender:									
Male	1034	169	16.3 (0.14, 0.18)	838	151	18.0 (0.15. 0.20)	196	18	9.2 (0.05, 0.14)
Female	1073	257	24.0 (0.21, 0.26)	885	228	25.8 (0.22, 0.28)	188	29	15.4 (0.10, 0.21)
Age:									
13 – 15 years	312	51	16.3 (0.12, 0.20)	186	35	18.8 (0.13, 0.25)	126	16	12.7 (0.07, 0.19)
16 – 17 years	1210	249	20.6 (0.18, 0.23)	1060	228	21.5 (0.19, 0.24)	150	21	14.0 (0.08, 0.20)
18 – 21 years	585	126	21.5 (0.18, 0.25)	477	116	24.3 (0.20, 0.28)	108	10	9.3 (0.04, 0.16)
Self-harm during the past 12 months	2107	350	16.6 (0.15, 0.18)	1723	314	18.2 (0.16, 0.20)	384	36	9.4 (0.06, 0.12)
Gender:									
Male	1034	134	13.0 (0.11, 0.15)	838	122	14.6 (0.12, 0.17)	196	12	6.1 (0.03, 0.10)
Female	1073	216	20.1 (0.17, 0.22)	885	192	21.7 (0.19, 0.24)	188	24	12.8 (0.08, 0.18)
Age:									
13 – 15 years	312	39	12.5 (0.09, 0.16)	186	27	14.5 (0.09, 0.20)	126	12	9.5 (0.05, 0.16)
16 – 17 years	1210	210	17.4 (0.15, 0.19)	1060	192	18.1 (0.15, 0.20)	150	18	12.0 (0.07, 0.18)
18 – 21 years	585	101	17.3 (0.14, 0.20)	477	95	19.9 (0.16, 0.23)	108	6	5.6 (0.02, 0.11)
Self-harm during the past one month	2107	65	3.1 (0.02, 0.04)	1723	61	3.5 (0.03, 0.05)	384	4	1.0 (0.00, 0.03)
Gender:									
Male	1034	22	2.1 (0.01, 0.03)	838	20	2.4 (0.02, 0.04)	196	2	1.0 (0.00, 0.04)
Female	1073	43	4.0 (0.03, 0.05)	885	41	4.6 (0.03, 0.06)	188	2	1.1 (0.00, 0.04)
Age:									
13 – 15 years	312	9	2.9 (0.01, 0.05)	186	8	4.3 (0.02, 0.08)	126	1	0.8 (0.00, 0.04)
16 – 17 years	1210	34	2.8 (0.02, 0.04)	1060	33	3.1 (0.02, 0.04)	150	1	0.7 (0.00, 0.04)
18 – 21 years	585	22	3.8 (0.02, 0.06)	477	20	4.2 (0.03, 0.06)	108	2	1.9 (0.00, 0.06)
Self-harm prior to the past 12 months	2107	269	12.8 (0.11, 0.14)	1723	238	13.8 (0.12, 0.15)	384	31	8.1 (0.05, 0.11)
Gender:									
Male	1034	111	10.7 (0.08, 0.12)	838	96	11.5 (0.09, 0.13)	196	15	7.7 (0.04, 0.12)
Female	1073	158	14.7 (0.12, 0.17)	885	142	16.0 (0.13, 0.18)	188	16	8.5 (0.04, 0.13)
Age:									
13 – 15 years	312	30	9.6 (0.06, 0.13)	186	20	10.8 (0.06, 0.16)	126	10	7.9 (0.03, 0.14)
16 – 17 years	1210	147	12.1 (0.10, 0.14)	1060	135	12.7 (0.10, 0.14)	150	12	8.0 (0.04, 0.13)
18 – 21 years	585	92	15.7 (0.12, 0.18)	477	83	17.4 (0.14, 0.21)	108	9	8.3 (0.04, 0.15)

12-month self-harm prevalence estimate: The 12-month prevalence estimate of self-harm across the total sample was 16.6% (95% CI: 0.15, 0.18), representing 18.2% (95% CI: 0.16, 0.20) among in-school adolescents and 9.4% (95% CI: 0.06, 0.12) among street-connected adolescents. Overall, more females 20.1% (95% CI: 0.17, 0.22) than males 13.0% (95% CI: 0.11, 0.15) reported self-harm during the previous 12 months. During the same time frame, across the total sample, 12.5% (95% CI: 0.09, 0.16) of the participants aged 13–15 years, 17.4% (95% CI: 0.15, 0.19) of those aged 16–17 years, and 17.3% (95% CI: 0.14, 0.20) of the participants aged 18–21 years reported having self-harmed.

1-month self-harm prevalence estimate: Across the total sample, 3.1% (95% CI: 0.02, 0.04) of the participants, representing 3.5% (95% CI: 0.03, 0.05) adolescents in school, and 1.0% (95% CI: 0.00, 0.03) street-connected adolescents reported self-harm during the past one month. Within the total sample, 2.1% (95% CI: 0.01, 0.03) males, and 4.0% (95% CI: 0.03, 0.05) females reported self-harm during the previous one month.

Prevalence estimate of self-harm prior to the past 12 months: Finally, participants were also asked whether they had self-harmed in their lifetime prior to the past 12 months. Self-harm history prior to the past 12 months across the total sample was 12.8% (95% CI: 0.11, 0.14), with 10.7% (95% CI: 0.08, 0.12) among males and 14.7% among females (95% CI: 0.12, 0.17). Self-harm prior to the past 12 months was reported by 13.8% (95% CI: 0.12, 0.15) adolescents in school, while 8.1% (95% CI: 0.05, 0.11) of street-connected adolescents reported that they had self-harmed during the same time reference.

Age at onset of self-harm: The participants were also asked to provide the age at which they self-harmed for the first time in their lifetime. Table 3.5 shows the distribution of the age at first-onset of self-harm as reported by the adolescents in this study. Across the total sample, the age at first-onset of self-harm varied between eight and 20 years, with a mean age of 14.4 years (SD: 1.93), and a modal age of 14 years. The modal age at first-onset of self-harm was 15 years among in-school adolescents and 14 years in street-connected adolescents. The mean age at first-onset of self-harm was 14.4 years among the males and 14.5 years among the female participants. The minimum ages at first-onset of self-harm among the age groups were nine years (among 13-15 year olds), eight years (16-17 year olds) and 10 years (among the 18-21 year olds).

Table 3.5. Age at first-onset of self-harm

	Minimum	Maximum	Mean	SD*	Modal
Overall sample	8	20	14.45	1.93	14
Adolescent groups:					
In-school	8	20	14.53	1.93	15
Street-connected	10	17	13.79	1.77	14
Gender:					
Male	8	19	14.44	1.82	14
Female	8	20	14.50	2.00	15
Age groups:					
13-15 years	9	15	12.84	1.41	13
16-17 years	8	17	14.32	1.70	15
18-21 years	10	20	15.46	2.05	14

***** Standard deviation

3.3.3. Methods of Self-harm

The methods of self-harm as reported by the participants in this survey were categorised into “self-injury only”, “self-poisoning only”, “other methods only”, and “multiple methods”; these are shown in Tables 3.7.1. Additionally, Tables 3.7.2 – 3.7.4 show the specific means of self-harm used in each category of methods of self-harm reported.

Self-injury: Overall, 54.5% of the participants reported the use of self-injury methods only (e.g., burning, cutting, stabbing, hanging, jumping, hitting body etc.). Between the adolescent groups, 58.8% adolescents in school had ever used self-injury, whereas 19.1% street-connected adolescents reported having used self-injury methods only (Table 3.6.1). Similar proportions of males (60.4%) and females (60.6%) reported that they had used self-injury methods only to self-harm. Specifically, as shown in Table 3.6.2, more adolescents reported cutting only (38.7%), and having used multiple means of self-injury (30.6%), followed by hitting body only (14.1%).

Table 3.6.1. Methods of self-harm ever used

	Overall	Adolescent groups		Gender		Age groups		
		In-school	Street-connected	Male	Female	13-15	16-17	18-21
Variable	*n = 426	*n = 379	*n = 47	*n = 169	*n = 257	*n = 51	*n = 249	*n = 126
Method of Self-harm ever used:	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Self-injury (only)	232 (54.5)	223 (58.8)	9 (19.1)	102 (60.4)	130 (60.6)	28 (54.9)	149 (59.8)	55 (43.7)
Self-poisoning (only)	69 (16.2)	62 (16.4)	7 (14.9)	26 (15.4)	43 (16.7)	3 (5.9)	37 (14.9)	29 (23.0)
Other method (only)	14 (3.3)	14 (3.7)	–	5 (3.0)	9 (3.5)	2 (3.9)	8 (3.2)	4 (3.2)
Multiple methods of self-harm	111 (26.1)	80 (21.1)	31 (66.0)	36 (21.3)	75 (29.2)	18 (35.3)	55 (22.1)	38 (30.2)

Note:
Self-injury (only): Any one of: Burning, Cutting, Stabbing, Gun/firearm, Hanging, Jumping, Hitting body, Strangling, Suffocating, Stepped into traffic.
Self-poisoning (only): Any one of: Alcohol, Medications, Illicit drugs, Poison/caustic substances.
Other method (only): Any one of: Drowning, Stopped required medication/treatment, Ingestion of foreign object, Starvation, Non-reporting of ill health, Indiscriminate unprotected sex.
Multiple methods of self-harm: Simultaneous use of self-injury and self-poisoning and/or other method.
* Denominator for computation = Lifetime self-harm frequency

Table 3.6.2. Means of self-injury ever used

	Overall	Adolescent groups		Gender		Age groups		
		In-school	Street-connected	Male	Female	13-15	16-17	18-21
Variable	*n = 333	*n = 293	*n = 40	*n = 135	*n = 198	*n = 46	*n = 198	*n = 89
Means of Self-injury ever used:	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Burning (only)	15 (4.5)	14 (4.8)	1 (2.5)	9 (6.7)	6 (3.0)	2 (4.3)	5 (2.5)	8 (9.0)
Cutting (only)	129 (38.7)	117 (39.9)	12 (30.0)	50 (37.0)	79 (39.9)	21 (45.7)	72 (36.4)	36 (40.4)
Stabbing/puncture (only)	12 (3.6)	11 (3.8)	1 (2.5)	5 (3.7)	7 (3.5)	1 (2.2)	6 (3.0)	5 (5.6)
Hanging (only)	9 (2.7)	5 (1.7)	4 (10.0)	2 (1.5)	7 (3.5)	3 (6.5)	4 (2.0)	2 (2.2)
Jumping (only)	4 (1.2)	3 (1.0)	1 (2.5)	1 (0.7)	3 (1.5)	1 (2.2)	1 (0.5)	2 (2.2)
Hitting body (only)	47 (14.1)	44 (15.0)	3 (7.5)	22 (16.3)	25 (12.6)	2 (4.3)	35 (17.7)	10 (11.2)
Strangling (only)	2 (0.6)	2 (0.7)	–	–	2 (1.0)	1 (2.2)	–	1 (1.1)
Suffocating (only)	9 (2.7)	8 (2.7)	1 (2.5)	1 (0.7)	8 (4.0)	–	9 (4.5)	–
Stepped into traffic (only)	4 (1.2)	1 (0.3)	3 (7.5)	–	4 (2.0)	2 (4.3)	2 (1.0)	–
Multiple means of self-injury	102 (30.6)	88 (30.0)	14 (35.0)	45 (33.3)	57 (28.8)	13 (28.3)	64 (32.3)	25 (28.1)

Note:
Multiple means of self-injury = Simultaneous use of two or more means of self-injury.
* Denominator for computation = Total participants who reported having ever used any means of self-injury.

Table 3.6.3. Means of self-poisoning ever used

	Overall	Adolescent groups		Gender		Age groups		
		In-school	Street-connected	Male	Female	13-15	16-17	18-21
Variable	*n = 166	*n = 127	*n = 39	*n = 57	*n = 109	*n = 20	*n = 83	*n = 63
Means of Self-poisoning ever used:	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Alcohol (only)	65 (39.2)	61 (48.0)	4 (10.3)	29 (50.9)	36 (33.0)	4 (20.0)	34 (41.0)	27 (42.9)
Medications (only)	46 (27.7)	31 (24.4)	15 (38.5)	7 (12.3)	39 (35.8)	7 (35.0)	24 (28.9)	15 (23.8)
Illicit drugs (only)	4 (2.4)	–	4 (10.3)	3 (5.3)	1 (0.9)	2 (10.0)	2 (2.4)	–
Poison/caustic substances (only)	20 (12.0)	18 (14.2)	2 (5.1)	6 (10.5)	14 (12.8)	1 (5.0)	10 (12.0)	9 (14.3)
Multiple means of self-poisoning	31 (18.7)	17 (13.4)	14 (35.9)	12 (21.1)	19 (17.4)	6 (30.0)	13 (15.7)	12 (19.0)

Note:
Multiple means of self-poisoning = Simultaneous use of two or more means of self-poisoning.
* Denominator for computation = Total participants who reported having ever used any means of self-poisoning.

Table 3.6.4. Means of “other method” of self-harm

	Overall	Adolescent groups		Gender		Age groups		
		In-school	Street-connected	Male	Female	13-15	16-17	18-21
Variable	*n = 71	*n = 68	*n = 3	*n = 24	*n = 47	*n = 7	*n = 41	*n = 23
Means of other methods of self-harm:	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Drowning (only)	23 (32.4)	21 (30.9)	2 (66.7)	13 (54.2)	10 (21.3)	1 (14.3)	11 (26.8)	11 (47.8)
Stopped required medication/treatment (only)	38 (53.5)	37 (54.4)	1 (33.3)	10 (41.7)	28 (59.6)	5 (71.4)	25 (61.0)	8 (34.8)
Ingestion of foreign object (only)	1 (1.4)	1 (1.5)	–	–	1 (2.1)	1 (14.3)	–	–
Starvation (only)	2 (2.8)	2 (2.9)	–	–	2 (4.3)	–	1 (2.4)	1 (4.3)
Indiscriminate unprotected sex (only)	2 (2.8)	2 (2.9)	–	–	2 (4.3)	–	–	2 (8.7)
Multiple means of “other method”	5 (7.0)	5 (7.4)	–	1 (4.2)	4 (8.5)	–	4 (9.8)	1 (4.3)

Note:
Multiple means “other method” of self-harm = Simultaneous use of two or more “other method” of self-harm.

* Denominator for computation = Total participants who reported having ever used any means of “other method” of self-harm.

Self-poisoning: Across the total sample, 16.2% reported having self-harmed by self-poisoning only; for example, through the use of alcohol, medications, illicit drugs, or poison/caustic substances (see Table 3.6.1). In terms of specific means of self-poisoning (as shown in Table 3.6.3), 39.2% reported having used alcohol only, whereas 27.7% reported that they had used medications only; 18.7% indicated that they had used multiple means of self-poisoning. More adolescents in school (48%) than street-connected adolescents (10.3%) reported the use of alcohol as a means of self-poisoning, whereas more males (50.9%) than females (33%) reported having used alcohol as a means of self-poisoning. However, more street-connected adolescents (38.5%) than adolescents in school (24.4) reported that they had used medications as a means of self-poisoning, while more females (35.8%) than males (12.3%) indicated that they had used medications as a means of self-poisoning.

Other methods of self-harm: Approximately, three percent of the overall sample reported having used other methods of self-harm in their lifetime (Table 3.6.1). These are methods of self-harm that cannot be categorised as self-injury nor self-poisoning. In this study six “other” methods of self-harm were reported: drowning, stopped required medication/treatment, ingestion of foreign object, starvation, non-reporting of ill health, and indiscriminate unprotected sex (Table 3.6.4). More street-connected adolescents (66.7%) than adolescents in school (30.9%) reported having used drowning as means of self-harm, whereas more adolescents in school (54.4%) than street-connected adolescents (33.3%) had ever stopped required medication/treatment as a means of self-harm. Notably, only female adolescents in school reported that they had self-harmed by means of ingestion of foreign object, starvation, non-reporting of ill health, and having indiscriminate unprotected sex.

3.3.4. Stated Reasons for last Episode of Self-Harm

As found in the systematic review of this project (Chapter 2) and similar to the findings from the Child & Adolescent Self-harm in Europe (CASE) Study (e.g., Rasmussen et al., 2016; Scoliers et al., 2009) and other recent studies (e.g., Doyle et al., 2017), the reported reasons by the participants for their last episode of self-harm were categorised mainly into intrapersonal and interpersonal reasons (see Table 3.7.1). Across the total sample, 81.2% endorsed intrapersonal reasons, while 64.8% indicated interpersonal reasons for their last episode of self-harm before this study. More street-connected adolescents (93.6%) than adolescents in school (79.7%) indicated intrapersonal reasons, while more females (68.1%) than males (59.8%) reported interpersonal reasons for their last episode of self-harm.

Table 3.7.1. Stated reasons for last episode of self-harm

	Overall	**Adolescent groups**		**Gender**		**Age groups**		
	*n = 426	**In-school** *n = 379	**Street-connected** *n = 47	**Male** *n = 169	**Female** *n = 257	**13-15** *n = 51	**16-17** *n = 249	**18-21** *n = 126
Reason:	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
My thoughts were so unbearable, I could not endure them any longer	196 (46.0)	170 (44.9)	26 (55.3)	69 (40.8)	127 (49.4)	22 (43.1)	112 (45.0)	62 (49.2)
It seemed that I lost control of myself, and I do not know why I did it.	102 (23.9)	98 (25.9)	4 (8.5)	48 (28.4)	54 (21.0)	8 (15.7)	65 (26.1)	29 (23.0)
The situation was so unbearable that I could not think of any other alternative	137 (32.2)	112 (29.6)	25 (53.2)	48 (28.4)	89 (34.6)	17 (33.3)	79 (31.7)	41 (32.5)
I wanted to get away for a while from an unacceptable situation.	118 (27.7)	107 (28.2)	11 (23.4)	47 (27.8)	71 (27.6)	10 (19.6)	59 (23.7)	49 (38.9)
I wanted to sleep for a while.	33 (7.7)	27 (7.1)	6 (12.8)	11 (6.5)	22 (8.6)	4 (7.8)	15 (6.0)	14 (11.1)
I wanted to punish myself	8 (1.9)	8 (2.1)	0	4 (2.4)	4 (1.6)	1 (2.0)	3 (1.2)	4 (3.2)
I wanted to die.	137 (32.2)	107 (28.2)	30 (63.8)	36 (21.3)	101 (39.3)	14 (27.5)	72 (28.9)	51 (40.5)
I wanted to show someone how much I loved him/her	64 (15.0)	59 (15.6)	5 (10.6)	24 (14.2)	40 (15.6)	4 (7.8)	34 (13.7)	26 (20.6)
I wanted others to know how desperate I felt.	58 (13.6)	52 (13.7)	6 (12.8)	18 (10.7)	40 (15.6)	6 (11.8)	37 (14.9)	15 (11.9)
I wanted to get help from someone	73 (17.1)	65 (17.2)	8 (17.0)	31 (18.3)	42 (16.3)	7 (13.7)	38 (15.3)	28 (22.2)
I wanted to know if someone really cared about me	145 (34.0)	137 (36.1)	8 (17.0)	46 (27.2)	99 (38.5)	18 (35.3)	81 (32.5)	46 (36.5)
I wanted others to pay for the way they treated me.	69 (16.2)	64 (16.9)	5 (10.6)	30 (17.8)	39 (15.2)	5 (9.8)	46 (18.5)	18 (14.3)
I wanted to make someone feel guilty.	77 (18.1)	70 (18.5)	7 (14.9)	27 (16.0)	50 (19.5)	13 (25.5)	45 (18.1)	19 (15.1)
I wanted to persuade someone to change his/her mind.	57 (13.4)	53 (14.0)	4 (8.5)	26 (15.4)	31 (12.1)	10 (19.6)	27 (10.8)	20 (15.9)
I wanted to make things easier for others	67 (15.7)	58 (15.3)	9 (19.1)	24 (14.2)	43 (16.7)	11 (21.6)	38 (15.3)	18 (14.3)
It was the work of the devil	27 (6.3)	25 (6.6)	2 (4.3)	16 (9.5)	11 (4.3)	3 (5.9)	14 (5.6)	10 (7.9)
Reporting at least one type of reason:								
Intrapersonal	346 (81.2)	302 (79.7)	44 (93.6)	136 (80.5)	210 (81.7)	38 (74.5)	195 (78.3)	113 (89.7)
Interpersonal	276 (64.8)	246 (64.9)	30 (63.8)	101 (59.8)	175 (68.1)	34 (66.7)	156 (62.7)	86 (68.3)
Other	27 (6.3)	25 (6.6)	2 (4.3)	16 (9.5)	11 (4.3)	3 (5.9)	14 (5.6)	10 (7.9)

Note:
* Denominator (n) for computation of proportion is lifetime self-harm frequency
Similar to the results of the systematic review of this project (Chapter 2 of this thesis) and findings from the Child & Adolescent Self-harm in Europe (CASE) Study (i.e., Rasmussen et al., 2016; Scoliers et al., 2009):

- "My thoughts were so unbearable, I could not endure them any longer", "It seemed that I lost control of myself, and I do not know why I did it", "The situation was so unbearable that I could not think of any other alternative", "I wanted to get away for a while from an unacceptable situation", "I wanted to sleep for a while", "I wanted to punish myself", and "I wanted to die" are categorised as "intrapersonal reasons".

- "I wanted to show someone how much I loved him/her", "I wanted others to know how desperate I felt", "I wanted to get help from someone", "I wanted to know if someone really cared about me", "I wanted others to pay for the way they treated me", "I wanted to make someone feel guilty", "I wanted to persuade someone to change his/her mind", and "I wanted to make things easier for others" are categorised as "interpersonal reasons".

- "It was the work of the devil" was categorised as "Other" reason.

Table 3.7.2. Stated reasons for last episode of self-harm

	Overall	Adolescent groups		Gender		Age groups		
		In-school	Street-connected	Male	Female	13-15	16-17	18-21
	*n = 426	*n = 379	*n = 47	*n = 169	*n = 257	*n = 51	*n = 249	*n = 126
Reason:	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Wanted to die only	54 (12.8)	43 (11.3)	11 (23.4)	15 (9.0)	39 (15.4)	5 (9.8)	35 (14.3)	14 (11.1)
Other stated reasons only	284 (67.5)	268 (71.7)	16 (34.0)	131 (78.4)	153 (60.2)	37 (72.5)	171 (70.1)	76 (60.3)
Wanted to die & other reasons	83 (19.7)	63 (16.8)	20 (42.6)	21 (12.6)	62 (24..4)	9 (17.6)	38 (15.6)	36 (28.6)
Missing	5	5	–	2	3	–	5	–

Note:

* Denominator (*n*) for computation was lifetime self-harm frequency.

- The reason “I wanted to die only” was categorised as “wanted to die only”.
- Any one or more (of the 16 possible reasons) reasons, excluding “I wanted to die”, were categorised as “other stated reasons only”
- Any two or more reasons including “I wanted to die” were categorised into “wanted to die & other reasons”.

Specifically, “my thoughts were so unbearable, I could not endure them any longer” (46%) was the most reported reason for the last episode of self-harm, across the total sample. Notably, 32.2% of the overall sample indicated “I wanted to die” as the reason for the last episode of self-harm before this study was conducted (28.2% in-school adolescents, and 63.8% street-connected adolescents). Table 3.7.2 presents these reasons in terms of motivation to die. Overall, 12.8% of the participants in this study reported only “I wanted to die” as the reason for the last episode of self-harm. This represents 11.3% adolescents in school, 23.4% street-connected adolescents, 9.0% males, and 15.4% females. It is noteworthy that the majority of the participants reported reasons other than intention to die for the last episode of self-harm (67.5%).

3.3.5. Factors Associated with Self-harm

As indicated earlier (under “Data Analysis Plan and Procedure” above; Section 3.2.6), bivariate analysis was performed to assess the relationship between each exposure variable and the outcome variable (self-harm during the past 12 months), followed by four multivariate analyses to assess the associations between the correlates and outcome variables.

3.3.5.1. Bivariate relationships between exposure variables and self-harm during the past 12 months

Table 3.8 shows the results of the Chi-squared tests assessing the relationship between each categorical exposure variable (socio-demographic factors and negative life events) and self-harm during the past 12 months. Each exposure variable showed a statistically significant relationship with self-harm during the previous 12 months, apart from age group, religious group, living arrangement, primary caretaker, cigarettes smoked weekly, sib size (number of siblings), death of family member, school residential status, truancy, and trouble with police.

The proportion of in-school adolescents (18%) who reported self-harm during the past 12 months was twice the proportion of street-connected adolescents (9%) who reported self-harm within the same period [χ^2 (1) = 17.75, $p < .001$]. Two in 10 females (20.1%) compared to one in 10 males (13%) reported self-harm during the past 12 months [χ^2 (1) = 19.55, $p < .001$]. Two in 10 of the adolescents identifying as heterosexual (15.6%), compared to four in 10 of those identifying as non-heterosexuals (44.6%), reported self-harm during the past 12 months [χ^2 (1) = 43.48, $p < .001$]. About eight in 10 (75%) of the adolescents who had self-harm histories prior to the past 12 months reported self-harm during the past 12 months,

compared to about one in 10 (8%) of those who had no self-harm history prior to the past 12 months [χ^2 (1) = 761.38, $p < .001$]. More adolescents who experienced or were exposed to a friend's attempted suicide during the past year (38%) than those who did not (13.9%) also reported self-harm during the past 12 months [χ^2 (1) = 87.98, $p < .001$]. Also, more adolescents who reported weekly alcohol use (28.4%) than those who did not report alcohol use (14.1%) also reported self-harm during the past 12 months [χ^2 (1) = 44.56, $p < .001$]. Relatedly, more male adolescents (20.8%) were likely than females (14.1%) to report weekly alcohol use; the bivariate relationship between gender and weekly alcohol use was statistically significant [χ^2 (1) = 16.57, $p < .001$]. Adolescents who reported illicit drug use (31%) were more likely than those who did not report any illicit drug use (15.8%) to also report self-harm during the past 12 months [χ^2 (1) = 17.76, $p < .001$]. Here, more street-connected adolescents (17.7%) than in-school adolescents (2.6%) were likely to report illicit drug use; the bivariate relationship between adolescent groups and illicit drug use was statistically significant [χ^2 (1) = 140.90, $p < .001$].

Table 3.8. Chi-squared tests assessing the relationships between adolescents' characteristics (socio-demographic factors and negative life events) and self-Harm during the past 12 months.

Variable	Category	**Self-harm during the past 12 months**		χ^2	*P-value (2-tailed)*
		No	Yes		
		1757 (83.4%)	350 (16.6%)		
		n (%)	n (%)		
Socio-demographic Factors					
Adolescent type	In-school	1409 (81.8)	314 (18.2)	17.75	**<** .001*
	Street-connected	348 (90.6)	36 (9.4)		
Gender	Male	900 (87.0)	134 (13.0)	19.55	**<** .001*
	Female	857 (79.9)	216 (20.1)		
Age group	13-15-years	273 (87.5)	39 (12.5)	4.47	.107
	16-17 years	1000 (82.6)	210 (17.4)		
	18-21 years	484 (82.7)	101 (17.3)		
Religious group	Christian	1501 (82.9)	310 (17.1)	2.10	.147
	Muslim	235 (86.4)	37 (13.6)		
Employment status	Unemployed	1397 (81.8)	311 (18.2)	16.20	**<** .001*
	Employed	357 (90.2)	39 (9.8)		
Living arrangement	Live with one or both parents	1183 (83.4)	236 (16.6)	2.40	.301
	Live with other relative	338 (81.6)	76 (18.4)		
	Live alone or with other person	236 (86.1)	38 (13.9)		
Primary caretaker	One or both parents	1289 (83.5)	255 (16.5)	5.92	.052
	Other relative	198 (78.9)	53 (21.1)		
	Myself other person	270 (86.5)	42 (13.5)		
Primary caretaker's employment status	Unemployed	130 (73.0)	48 (27.0)	13.23	**<** .001*
	Employed	1536 (83.8)	297 (16.2)		
Personal Level Factors					
Sexual orientation	Heterosexual	1714 (84.4)	316 (15.6)	43.48	**<** .001*
	Non-heterosexual	41 (55.4)	33 (44.6)		
Sexual orientation worries	No	1679 (84.8)	300 (15.2)	50.42	**<** .001*
	Yes	77 (60.6)	50 (39.4)		
Cigarettes smoked weekly	Never/stopped	1715 (83.6)	336 (16.4)	1.70	.087
	1 or more cigarettes	42 (72.0)	14 (25.0)		
Weekly alcoholic drinks	Never drink	1495 (85.9)	246 (14.1)	44.56	**<** .001*
	1 or more drinks	262 (71.6)	104 (28.4)		
Illicit drug used in the past year	Never take illicit drug	1678 (84.2)	315 (15.8)	17.76	**<** .001*
	Took illicit drug	78 (69.0)	35 (31.0)		
Family Level Factors					
Family structure:	Father has 1 wife	1235 (85.3)	213 (14.7)	12.19	**<** .001*
	Father has **>** 1 wife	521 (79.2)	137 (20.8)		
Sib size:	0 – 4 siblings	1223(83.1)	249 (16.9)	0.33	.568
	> 4 siblings	533 (83.9)	102 (16.1)		

Table 3.8. (continued)

Variable	Category	**Self-harm during the past 12 months**		χ^2	*P-value (2-tailed)*
		No	Yes		
		1757 (83.4%)	350 (16.6%)		
Family Level Factors (continued)		n (%)	n (%)		
Parental separation/divorce:	No	1152 (86.3)	183 (13.7)	21.09	**<** .001*
	Yes	604 (78.4)	166 (21.6)		
Conflict with parent:	No	1385 (88.3)	183 (11.7)	108.46	**<** .001*
	Yes	371 (69.0)	167 (31.0)		
Parental conflict:	No	1057 (89.0)	131 (11.0)	61.51	**<** .001*
	Yes	699 (76.1)	219 (23.9)		
Serious accident or illness of family member:	No	875 (86.3)	139 (13.7)	12.03	**<** .01*
	Yes	880 (80.7)	211 (19.3)		
Death of family member:	No	1128 (84.2)	211 (15.8)	1.93	.165
	Yes	629 (81.9)	139 (18.1)		
Family member suicide:	No	1689 (83.8)	327 (16.2)	5.15	**<** .05*
	Yes	68 (74.7)	23 (25.3)		
Family member attempted suicide:	No	1616 (85.7)	269 (14.3)	72.25	**<** .001*
	Yes	139 (63.2)	81 (36.8)		
School Level Factors					
School residential status:	Boarding	311 (82.7)	65 (17.3)	0.283	.594
	Day student	1138 (81.5)	258 (18.5)		
School work problems:	No	995 (88.1)	134 (11.9)	84.73	**<** .001*
	Yes	453 (70.6)	189 (29.4)		
Truancy:	0 – 5 days	1300 (82.3)	279 (17.7)	3.29	.070
	> 5 days	147 (77.0)	44 (23.0)		
Sacked from school:	No	801 (84.9)	142 (15.1)	13.32	**<** .001*
	Yes	647 (78.2)	180 (21.8)		

Table 3.8. (continued)

Variable	Category	**Self-harm during the past 12 months**		χ^2	*P-value (2-tailed)*
		No	Yes		
		1757 (83.4%)	350 (16.6%)		
Interpersonal Level Factors		n (%)	n (%)		
In romantic relationship:	No	1156 (87.8)	161 (12.2)	48.79	**<** .001*
	Yes	601 (76.1)	189 (23.9)		
Serious relationship problems:	No	1432 (86.2)	229 (13.8)	45.19	**<** .001*
	Yes	325 (72.9)	121 (27.1)		
Breakup:	No	1383 (86.9)	208 (13.1)	59.03	**<** .001*
	Yes	373 (72.4)	142 (27.6)		
Difficulty making/keeping friends:	No	1142 (87.0)	171 (13.0)	32.38	**<** .001*
	Yes	615 (77.5)	179 (22.5)		
Conflict with friends:	No	950 (89.0)	118 (11.0)	48.52	**<** .001*
	Yes	806 (77.6)	232 (22.4)		
Serious accident or illness of close friend:	No	1130 (86.5)	176 (13.5)	24.37	**<** .001*
	Yes	627 (78.3)	174 (21.7)		
Death of Friend:	No	761 (87.6)	108 (12.4)	18.37	**<** .001*
	Yes	996 (80.5)	241 (19.5)		
Friend suicide:	No	1701 (84.1)	322 (15.9)	17.66	**<** .001*
	Yes	56 (66.7)	28 (33.3)		
Friend attempted suicide:	No	1610 (86.1)	260 (13.9)	87.98	**<** .001*
	Yes	147 (62.0)	90 (38.0)		
Other Factors					
Bullied:	No	1210 (87.8)	168 (12.2)	56.62	**<** .001*
	Yes	545 (75.0)	182 (25.0)		
Physically abused:	No	1166 (88.8)	147 (11.2)	73.77	**<** .001*
	Yes	591 (74.4)	203 (25.6)		
Sexually abused:	No	1472 (87.6)	2089 (12.4)	107.10	**<** .001*
	Yes	285 (66.7)	142 (33.3)		
Trouble with police:	No	1636 (83.6)	320 (16.4)	1.24	**.**264
	Yes	121 (80.1)	30 (19.9)		
Other negative life events during the past 12 months.	No	1281 (86.7)	196 (13.3)	40.03	**<** .001*
	Yes	475 (75.5)	154 (24.5)		
Total negative life events during the past 12 months	≤ 5	844 (94.0)	54 (6.0)	201.27	**<** .001*
	6 – 10	680 (81.7)	152 (18.3)		
	> 10	233 (61.8)	144 (38.2)		
Self-harm prior to the past 12 months	No	1690 (91.9)	148 (8.1)	761.38	**<** .001*
	Yes	67 (24.9)	202 (75.1)		

Notes: χ^2 = Chi squared value. * Denotes statistically significant relationship.

3.3.5.2. Single-level multivariate analyses: Associations between exposure variables and self-harm (frequency/counts) during the past 12 months

These involved the results of two multivariable analyses: binary logistic regression and negative binomial regression.

3.3.5.2.1. Binary Logistic Regression Analysis

Binary logistic regression was used to examine the association between the exposure variables and the dichotomous outcome variable, self-harm during the past 12 months (Agresti, 2013; Fleiss et al., 2003; Tabachnick & Fidell, 2013). As recommended for building logistic regression models (Babyak, 2004; Harrell et al., 1996; Steyerberg et al., 2018; Sun et al., 1996), all the individual exposure variables were included in the multivariate models regardless of their statistically significant bivariate relationships with the outcome variable. To address the fourth research question guiding this cross-sectional study, binary logistic regression models were built using three aspects of the data: Overall data, school data, and street-connected data.

Overall data: Two models were generated, adjusting for all socio-demographic variables (Table 3.9). Model 1 included all the socio-demographic characteristics and individual negative events; this model significantly distinguished between adolescents who self-harmed during the past 12 months and those who did not ($\chi^2_{(df = 44)}$ = 690.37, p <0.001. Cox & Snell R^2 = 0.329, Nagelkerke R^2 = 0.536, Homer & Lemeshow test = 0.152). Model 1 correctly predicted 89.5% of variance in the outcome variable. As shown in Table 3.9, having a non-heterosexual orientation, conflict with parents, school work problems, and being physically abused showed statistically significant association with self-harm during the past 12 months. Having a history of self-harm prior to the past 12 months (OR = 26.82; 95% CI = 17.82, 40.37), family member attempted suicide (OR = 2.55; 95% CI = 1.52, 4.31), and friend attempted suicide (OR = 2.53; 95% CI = 1.53, 4.16) showed very strong statistically significant associations with self-harm during the past 12 months (p < .001). Having a family member who attempted suicide or a friend who attempted suicide increases the odds of self-harm by 2.5 times, whereas having a history of self-harm prior to the past 12 months increases the odds of self-harm by 26.8 times.

Table 3.9. Binary logistic regression assessing the associations between socio-demographic characteristics and negative events during the past 12 months, and self-harm during the past 12 months.

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*β*	AOR	95% CI Lower	Upper
Adolescent groups	-0.14	0.87	0.24	3.13	-0.43	0.65	0.19	2.11
Gender	0.20	1.22	0.85	1.76	0.35	1.42 *	1.02	1.98
Age group:								
13 – 15 years		Reference				Reference		
16 – 17 years	-0.13	0.88	0.50	1.55	-0.02	0.97	0.55	1.71
18 – 21 years	-0.47	0.62	0.32	1.21	-0.51	0.60	0.32	1.15
Religious group	-0.25	0.78	0.39	1.58	-0.12	0.89	0.47	1.66
Employment status	-0.61	0.54	0.22	1.33	-0.65	0.52	0.22	1.24
Living arrangement:								
One or both parents		Reference				Reference		
Other relative	0.01	1.01	0.59	1.71	-0.11	0.89	0.55	1.48
Alone or with other person	0.67	1.96	0.94	4.11	0.43	1.53	0.75	3.12
Primary caretaker:								
One or both parents		Reference				Reference		
Other relative	0.17	1.18	0.62	2.26	0.02	1.02	0.56	1.86
Myself or other person	-0.75	0.47	0.21	1.06	-0.55	0.58	0.27	1.22

Table 3.9 (continued)

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*β*	AOR	95% CI Lower	Upper
Primary caretaker's employment status	-0.54	0.58	0.32	1.05	-0.47	0.62	0.36	1.08
Sexual orientation	1.28	3.59 **	1.53	8.42	1.12	3.05 **	1.36	6.87
Weekly cigarettes	0.16	1.17	0.17	8.03	0.72	2.06	0.38	11.15
Weekly alcohol use	0.45	1.57	0.98	2.51	0.56	1.75 *	1.11	2.74
Illicit drug use	0.32	1.38	0.52	3.68	0.22	1.25	0.49	3.17
Family structure	0.11	1.12	0.73	1.72	0.14	1.14	0.79	1.65
Sib size	-0.10	0.97	0.60	1.36	-0.12	0.89	0.61	1.30
School residential status	0.08	1.08	0.69	1.70	0.11	1.12	0.73	1.70
In romantic relationship	0.42	1.51	1.00	2.29	0.24	1.27	0.90	1.80
Self-harm prior to the past 12 months	3.29	26.82 ***	17.82	40.37	3.27	26.42 ***	17.99	38.81
Total negative events during the past 12 months:								
≤ 5		–				Reference		
6 – 10		–			1.16	3.18 ***	2.13	4.73
> 10		–			1.81	6.12 ***	3.71	10.09
Sexual orientation worries	0.34	1.39	0.74	2.63				
Parental separation/divorce	0.15	1.15	0.76	1.74				
Conflict with parents	0.60	1.83 **	1.23	2.73				

Table 3.9 (continued)

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*β*	AOR	95% CI Lower	Upper
Parental conflict	0.10	0.72	0.49	1.05				
Serious accident or illness of family member	-0.33	0.72	0.49	1.05				
Death of family member	-0.27	0.76	0.51	1.15				
Family member suicide	-0.73	0.48	0.19	1.20				
Family member attempted suicide	0.94	2.55 ***	1.52	4.31				
School work problems	0.44	1.55 *	1.08	2.24				
Truancy	-0.62	0.54	0.26	1.01				
Sacked from school	-0.11	0.89	0.62	1.29				
Serious romantic relationship problems	-0.16	0.85	0.51	1.43				
Breakup	0.18	1.19	0.76	1.86				
Difficulty making / keeping friends	0.19	1.20	0.83	1.73				
Conflict with friends	0.10	1.10	0.76	1.61				
Serious accident or illness of close friend	0.17	1.18	0.81	1.71				
Death of friend	0.19	1.21	0.82	1.78				
Friend suicide	-0.18	0.83	0.31	2.24				
Friend attempted suicide	0.93	2.53 ***	1.53	4.16				

Table 3.9 (continued)

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*B*	AOR	95% CI Lower	Upper
Bullied	0.37	1.45	0.99	2.11				
Physically abused	0.54	1.71 **	1.18	2.48				
Sexually abused	0.22	1.25	0.81	1.92				
Trouble with police	0.37	1.44	0.61	3.42				
Other negative events during the past 12 months.	0.17	1.19	0.79	1.77				

Notes:

β = Beta value

AOR = Adjusted Odds Ratio

CI = Confidence interval

*** p <0.001, ** p <0.01, * p < 0.05.

Model 1 assessed the associations between adolescents' socio-demographic characteristics and individual negative events, and self-harm during the past 12 months [Model 1: $\chi^2_{(df = 44)} = 690.37$, p <0.001. Cox & Snell $R^2 = 0.329$; Nagelkerke $R^2 = 0.536$; Homer & Lemeshow test = 0.152; Cases correctly predicted = 89.5%].

Model 2 assessed the associations between adolescents' socio-demographic characteristics and total negative events, and self-harm during the past 12 month [Model 2: $\chi^2_{(df = 22)} = 627.91$, p <0.001. Cox & Snell $R^2 = 0.301$; Nagelkerke $R^2 = 0.491$; Homer & Lemeshow test = 0.712; Cases correctly predicted = 89.2%].

Furthermore, in model 1 (Table 3.9), the ORs and CIs of three factors that did not reach the chosen threshold of statistical significance provided clinically significant evidence of an association with self-harm: alcohol use (OR=1.57, 95% CI=0.98, 2.51), being in a romantic relationship (OR=1.51, 95% CI=1.00, 2.29) and having been bullied (OR=1.45, 95% CI=0.99, 2.11).

In model 2, the individual negative events were replaced with total negative events (Table 3.9). This model correctly predicted 89.2% of the variance in the outcome variable ($\chi^2_{(df = 22)}$ = 627.91, p <0.001. Cox & Snell R^2 = 0.301, Nagelkerke R^2 = 0.491, Homer & Lemeshow test = 0.712). Female gender (OR = 1.42; 95% CI = 1.02, 1.98), non-heterosexual orientation (OR = 3.05; 95% CI = 1.36, 6.87), one or more drinks weekly alcoholic drinks (OR = 1.75; 95% CI = 1.11, 2.74), having a history of self-harm prior to the past 12 months (OR = 26.42; 95% CI = 17.99, 38.81), and experiencing six or more negative events during the previous 12 months showed a statistically significant association with self-harm during the past 12 months. Experiencing 6 – 10 negative events increases the odds of self-harm by 3 times, while experiencing more than 10 negative events increases the odds of self-harm by 6 times. Notably, in both model 1 and model 2, adolescent groups (in-school and street-connected) showed no statistically significant association with self-harm, even though being in the street situation was associated with lower likelihood of self-harm – a plausible finding that could be a function of the difference between the sample sizes of the two adolescent groups and the analysis.

School Data: Two binary logistic regression models assessing the associations between school-specific exposure variables and self-harm during the past 12 months were generated. Appendix 3.17A tabulates the results of models 1 and 2. Model 1 assessed the associations between school adolescents' characteristics (socio-demographic characteristics and individual negative events during the past 12 months) and self-harm during the past 12 months ($\chi^2_{(df = 42)}$ = 675.19, p <0.001. Cox & Snell R^2 = 0.329, Nagelkerke R^2 = 0.536, Homer & Lemeshow test = 0.092, cases correctly predicted = 89.9%). Having a non-heterosexual orientation, weekly alcohol use, being in a romantic relationship, having self-harmed prior to the past 12 months, conflict with parents, family member attempted suicide, school work problems, friend attempted suicide, having been bullied and physically abused showed statistically significant associations with increased odds of self-harm during the past 12 months.

Model 2 assessed the associations between school adolescents' characteristics (socio-demographic characteristics and total negative events during

the past 12 months) and self-harm during the past 12 months ($\chi^2_{(df = 20)}$ = 610.40, p <0.001. Cox & Snell R^2 = 0.300, Nagelkerke R^2 = 0.489, Homer & Lemeshow test = 0.794, cases correctly predicted = 89.1%). Specifically, having a non-heterosexual orientation, weekly alcohol use, having a history of self-harm prior to the past 12 months, and having experienced a six or more total negative life events in the past year showed statistically significant associations with increased odds of self-harm during the past 12 months.

Street-connected Data: Due to sparse data bias, inadequate frequencies within cells of the cross-tabulations of the exposure variable categories and the outcome variable (Greenland, Mansournia & Altman, 2016), only one binary logistic regression model assessing the associations between street-specific exposure variables and self-harm during the past 12 months was generated. Appendix 3.18A identifies the specific exposure variables with sparse data bias and tabulates the results of the final logistic regression model. The final model assessed the associations between street-connected adolescents' characteristics (socio-demographic characteristics and individual negative events during the past 12 months) and self-harm during the past 12 months ($\chi^2_{(df = 23)}$ = 100.37, p <0.001. Cox & Snell R2 = 0.307, Nagelkerke R2 = 0.635, Homer & Lemeshow test = 0.054, cases correctly predicted = 94.5%). Specifically, still not having contact with family, having a history of self-harm prior to the past 12 months, and having experienced a breakup showed statistically significant associations with self-harm during the past 12 months.

1.1.1.1.1. Negative Binomial Regression Analysis

Based on the fourth research question guiding this cross-sectional study, negative binomial regression models were built using three aspects of the data: Overall data, school data, and street-connected data.

Overall data: Table 3.10 shows the results of the negative binomial regression models based on the overall data, testing the association between the exposure variables and the frequency/counts of self-harm during the previous 12 months. Here, two models were developed: model 1 assessed the associations between adolescents' socio-demographic characteristics and individual negative events, and frequency/counts of self-harm during the past 12 months, whereas model 2 examined the associations between adolescents' socio-demographic characteristics and total negative events, and frequency of self-harm during the past 12 months.

In model 1, eight exposure variables [living alone or with other person (IRR = 1.86; 95% CI = 1.12, 3.09), having one or more alcoholic drinks weekly (IRR = 1.51; 95% CI = 1.10, 2.07), being in a romantic relationship (IRR = 1.45; 95% CI = 1.09, 1.93), having a history of self-harm prior to the past 12 months (IRR = 10.49; 95% CI = 8.23, 13.39), experiencing parental conflict (IRR = 1.35; 95% CI = 1.04, 1.75), having difficulty making/keeping friends (IRR = 1.33; 95% CI = 1.03, 1.71), experiencing friend attempted suicide (IRR = 1.76; 95% CI = 1.27, 2.45), and other negative events (IRR = 1.44; 95% CI = 1.11, 1.88)] showed statistically significant associations with higher frequency/counts of self-harm during the previous 12 months. However, having more than four siblings (IRR = 0.74; 95% CI = 0.55, 0.99), and having serious romantic relationship problems (IRR = 0.69; 95% CI = 0.48, 0.98) were associated with lower frequency of self-harm.

In model 2, where the individual negative events were replaced with total negative events, female gender (IRR = 1.30; 95% CI = 1.03, 1.64), having one or more alcoholic drinks weekly (IRR = 1.63; 95% CI = 1.20, 2.20), having a history of self-harm prior to the past 12 months (IRR = 11.17; 95% CI = 8.85, 14.10), and experiencing six or more negative events during the past 12 months [6 – 10 negative events (IRR = 2.49; 95% CI = 1.86, 3.35) and more than 10 negative events (IRR = 3.77; 95% CI = 2.67, 5.32)] showed statistically significant association with higher frequency/counts of self-harm during the past 12 months. However, having more than four siblings (IRR = 0.75; 95% CI = 0.57, 0.99) was associated with lower frequency of self-harm. Additionally, in model 1, even though the factor, friend suicide, did not reach the chosen threshold of statistical significance, the IRR and CI showed a clinically significant evidence of an association between friend suicide and counts/repetition of self-harm in the past year (IRR=1.55; 95% CI=0.91, 1.65).

In both model 1 and model 2, having alcoholic drinks weekly, and having a history of self-harm prior to the past 12 months showed a statistically significant association with higher frequency of self-harm and having more than four siblings was associated with lower frequency of self-harm (Table 3.10). Interestingly, adolescent groups (in-school or street-connected) and age group showed no statistically significant associated with the frequency/counts of self-harm during the previous 12 months.

Table 3.10. Negative binomial regression assessing associations between characteristics of adolescents (socio-demographics and negative events) and frequency/repetition of self-harm during the past 12 months.

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI Lower	Upper	*β*	AIRR	95% CI Lower	Upper
Adolescent groups	School adolescents		Reference				Reference		
	Street-connected adolescents	0.37	1.44	0.62	3.35	0.08	1.08	0.50	2.33
Gender	Male		Reference				Reference		
	Female	0.16	1.17	0.91	1.50	0.26	1.30*	1.03	1.64
Age group	13 – 15 years		Reference				Reference		
	16 – 17 years	-0.16	0.85	0.57	1.27	-0.16	0.85	0.58	1.24
	18 – 21 years	-0.28	0.76	0.48	1.19	-0.39	0.68	0.45	1.04
Religious group	Christian		Reference				Reference		
	Muslim	-0.35	0.71	0.43	1.15	-0.26	0.77	0.49	1.22
Employment status	Unemployed		Reference				Reference		
	Employed	-0.57	0.57	0.31	1.04	-0.46	0.63	0.36	1.12
Living arrangement	One or both parents		Reference				Reference		
	Other relative	0.12	1.13	0.78	1.65	0.03	1.03	0.72	1.46
	Alone or with other person	0.62	1.86*	1.12	3.09	0.36	1.43	0.89	2.32

Table 3.10 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI		*β*	AIRR	95% CI	
				Lower	Upper			Lower	Upper
Primary caretaker	One or both parents		Reference				Reference		
	Other relative	0.01	1.00	0.65	1.56	-0.06	0.94	0.63	1.42
	Myself or other person	-0.52	0.59	0.36	0.99	-0.34	0.71	0.44	1.15
Primary caretaker's employment status	Unemployed		Reference				Reference		
	Employed	-0.06	0.94	0.62	1.42	-0.10	0.90	0.62	1.32
Sexual orientation	Heterosexual		Reference				Reference		
	Non-heterosexual	0.21	1.23	0.73	2.06	0.17	1.19	0.73	1.95
Weekly cigarettes	Never/stopped smoking		Reference				Reference		
	≥ 1 cigarette	0.14	1.15	0.35	3.73	0.67	1.96	0.70	5.51
Weekly alcohol use	Never drink		Reference				Reference		
	One or more drinks	0.42	1.51*	1.10	2.07	0.49	1.63**	1.20	2.20
Illicit drug use	Never take drugs		Reference				Reference		
	Took illicit drug	-0.07	0.93	0.54	1.61	0.07	1.08	0.64	1.83
Family structure	My father has one wife		Reference				Reference		
	My father has more than one wife	0.01	1.00	0.75	1.34	0.03	1.03	0.80	1.32

Table 3.10 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI Lower	Upper	*β*	AIRR	95% CI Lower	Upper
Sib size	0 – 4 siblings		Reference				Reference		
	> 4 siblings	-0.30	0.74*	0.55	0.99	-0.29	0.75*	0.57	0.99
School residential status	Boarding		Reference				Reference		
	Day student	0.09	1.09	0.80	1.50	0.13	1.14	0.85	1.52
In romantic relationship	No		Reference				Reference		
	Yes	0.37	1.45*	1.09	1.93	0.11	1.12	0.88	1.42
Self-harm prior to the past 12 months	No		Reference				Reference		
	Yes	2.35	10.49***	8.23	13.39	2.41	11.17***	8.85	14.10
Total negative events during the past 12 months:	≤ 5						Reference		
	6 – 10					0.92	2.49***	1.86	3.35
	> 10					1.33	3.77***	2.67	5.32
Sexual orientation worries	No		Reference						
	Yes	0.28	1.32	0.89	1.96				
Parental separation divorce	No		Reference						
	Yes	0.01	1.01	0.76	1.33				

Table 3.10 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI Lower	Upper	*β*	AIRR	95% CI Lower	Upper
Conflict with parents	No		Reference						
	Yes	0.28	1.32	0.99	1.74				
Parental conflict	No		Reference						
	Yes	0.30	1.35*	1.04	1.75				
Serious accident or illness of family member	No		Reference						
	Yes	0.04	1.04	0.80	1.35				
Death of family member	No		Reference						
	Yes	-0.11	0.90	0.68	1.19				
Family member suicide	No		Reference						
	Yes	-0.44	0.64	0.36	1.14				
Family member attempted suicide	No		Reference						
	Yes	0.16	1.18	0.83	1.66				
School work problems	No		Reference						
	Yes	0.21	1.23	0.96	1.59				
Truancy	0 – 5 days		Reference						
	> 5 days	-0.26	0.77	0.53	1.12				

Table 3.10 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI		*β*	AIRR	95% CI	
				Lower	Upper			Lower	Upper
Sacked from school	No		Reference						
	Yes	0.02	1.02	0.79	1.31				
Serious romantic relationship problems	No		Reference						
	Yes	-0.38	0.69*	0.48	0.98				
Breakup	No		Reference						
	Yes	0.19	1.21	0.89	1.64				
Difficulty making/keeping friends	No		Reference						
	Yes	0.28	1.33*	1.03	1.71				
Conflict with friends	No		Reference						
	Yes	-0.01	0.99	0.76	1.30				
Serious accident or illness of close friend	No		Reference						
	Yes	-0.11	0.89	0.69	1.16				
Death of friend	No		Reference						
	Yes	0.05	1.05	0.80	1.37				
Friend suicide	No		Reference						
	Yes	0.44	1.55	0.91	1.65				

Table 3.10 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI		*β*	AIRR	95% CI	
				Lower	Upper			Lower	Upper
Friend attempted suicide	No		Reference						
	Yes	0.57	1.76**	1.27	2.45				
Bullied	No		Reference						
	Yes	0.23	1.25	0.97	1.62				
Physically abused	No		Reference						
	Yes	0.19	1.21	0.93	1.57				
Sexually abused	No		Reference						
	Yes	0.11	1.11	0.83	1.49				
Trouble with police	No		Reference						
	Yes	0.43	1.54	0.87	2.69				
Other negative events	No		Reference						
	Yes	0.37	1.44**	1.11	1.88				
Likelihood Ratio Chi-squared			974.44***				918.96 ***		

Notes:

β = Beta value

AIRR = Adjusted Incidence Rate Ratio

CI = Confidence interval

*** p <0.001, ** p <0.01, * p < 0.05.

School Data: Two negative binomial regression models were generated using the data of the in-school adolescents. Appendix 3.17B tabulates the results of the school-specific negative binomial regression models. Model 1 assessed the associations between school adolescents' characteristics (socio-demographic characteristics and individual negative events during the past 12 months) and frequency/counts of self-harm during the past 12 months. Living alone or with other person (non-relative), weekly alcohol use, having less than five siblings, being in a romantic relationship, having a history of self-harm prior to the past 12 months, conflict with parents, having experienced parental conflict, family member suicide, serious romantic relationship problems, difficulty making/keeping friends, friend attempted suicide, having been bullied, and having experienced other negative life events in the past year showed statistically significant associations with increased incidence rates (frequency/counts) of self-harm during the past 12 months.

Model 2 assessed the associations between school adolescents' characteristics (socio-demographic characteristics and total negative events during the past 12 months) and the frequency/counts of self-harm during the past 12 months. Here, female gender, weekly alcohol use, having less than five siblings, having a history of self-harm prior to the past 12 months, and having experienced six or more total negative life events in the past year showed statistically significant associations with increased incidence rates (frequency/counts) of self-harm during the past 12 months.

Street-connected Data: Due to sparse data bias (Greenland et al., 2016), only one negative binomial regression model assessing the associations between street-specific exposure variables and the frequency/counts of self-harm during the past 12 months was generated. Appendix 3.18B tabulates the results of the street-specific negative binomial regression model. In this model, female gender, having a history of self-harm prior to the past 12 months, and having experienced a friend's attempted suicide in the past year showed statistically significant associations with increased incidence rates (frequency/counts) of self-harm during the past 12 months.

1.1.1.2. Multi-level multivariate analyses: Associations between contexts and exposure variables, and self-harm (frequency/counts) during the past 12 months.

These covered the results of two multi-level multivariable analyses: multi-level binary logisitc regression and multi-level negative binomial regression.

1.1.1.2.1. Multi-Level Binary Logistic Regression Analysis

Given that the participants in this study were clustered by school and street contexts, multi-level logistic regression (Finch et al., 2014; Hilbe, 2011; Hox, 2010) was performed to examine the association between the clusters (schools and street contexts) and self-harm during the past 12 months. To test the significance of the clusters' effects, the author ran a likelihood ratio test (LR) comparing the null multilevel model with a null single-level model (i.e., no predicators in the logistic regression model); the results showed strong evidence that variation between clusters in terms of self-harm was significantly not zero (LR = 61.33, $p < .001$). The estimates of the clusters' effect with 95% CI resulting from the null multilevel model were further demonstrated by means of a caterpillar plot (Appendix 3.19). In the next step, all the potential exposure variables were entered into the model. Here, two models were developed; model 1 assessed the associations between adolescents' socio-demographic characteristics and individual negative events, and self-harm during the past 12 months, whereas model 2 examined the associations between adolescents' socio-demographic characteristics and total negative events, and self-harm during the past 12 months.

Mode1 shows that adolescents with non-heterosexual orientation (OR = 3.81; 95% CI = 1.57, 9.24), having one or more alcoholic drinks weekly (OR = 1.64; 95% CI = 1.01, 2.65), having a history of self-harm prior to the past 12 months (OR = 28.01; 95% CI = 18.34, 42.80), having conflict with parents (OR = 1.87; 95% CI = 1.24, 2.81), family member attempted suicide (OR = 2.48; 95% CI = 1.46, 4.22), school work problems (OR = 1.55; 95% CI = 1.06, 2.25), friend attempted suicide (OR = 2.61; 95% CI = 1.57, 4.34), and adolescents who were physically abused (OR = 1.69; 95% CI = 1.16, 2.47) were more likely to self-harm (Table 3.11). Although the factor, in romantic relationship, did not reach the chosen threshold of statistical significance, the OR and CI showed a clinically significant evidence of an association between in romantic relationship and counts/repetition of self-harm in the past year (OR=1.53; 95% CI=1.00, 2.33).

Table 3.11. Multi-level logistic regression assessing the associations between socio-demographic characteristics and negative events during the past 12 months, and self-harm during the past 12 months.

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*β*	AOR	95% CI Lower	Upper
Gender (female)	0.09	1.24	0.84	1.83	0.16	1.43	0.99	2.04
Age group:								
13 – 15 years		Reference				Reference		
16 – 17 years	-0.05	0.89	0.50	1.67	0.01	1.02	0.58	1.79
18 – 21 years	-0.21	0.62	0.32	1.21	-0.21	0.62	0.32	1.19
Religious group (Muslim)	-0.09	0.81	0.40	1.65	-0.04	0.92	0.49	1.73
Employment status (employed)	-0.27	0.54	0.22	1.32	-0.28	0.52	0.22	1.24
Living arrangement:								
One or both parents		Reference				Reference		
Other relative	0.01	1.02	0.59	1.74	-0.04	0.92	0.55	1.52
Alone or with other person	0.28	1.89	0.89	3.98	0.17	1.47	0.72	3.02
Primary caretaker:								
One or both parents		Reference				Reference		
Other relative	0.06	1.14	0.59	2.19	-0.01	0.98	0.53	1.81
Myself or other person	-0.34	0.46	0.20	1.06	-0.24	0.58	0.27	1.26
Primary caretaker's employment status (employed)	-0.25	0.56	0.31	1.03	-0.23	0.59	0.34	1.04
Sexual orientation (non-heterosexual)	0.58	3.81**	1.57	9.24	0.52	3.29 **	1.42	7.63

Table 3.11 (continued)

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*β*	AOR	95% CI Lower	Upper
Weekly cigarettes (1 cigarette)	0.13	1.36	0.19	9.84	0.39	2.45	0.42	14.21
Weekly alcohol use (1 or more drinks)	0.21	1.64*	1.01	2.65	0.26	1.83**	1.16	2.90
Illicit drug use (took illicit drug)	0.19	1.55	0.56	4.23	0.15	1.41	0.54	3.68
Family structure (my father more than one wife)	0.05	1.13	0.73	1.74	0.07	1.18	0.81	1.72
Sib size (> 4 siblings)	-0.05	0.89	0.59	1.35	-0.06	0.88	0.59	1.30
School residential status (day student)	0.02	1.04	0.61	1.77	0.02	1.04	0.62	1.75
In romantic relationship (yes)	0.18	1.53	1.00	2.33	0.11	1.29	0.91	1.85
Self-harm prior to the past 12 months (yes)	1.45	28.01***	18.34	42.80	1.45	28.21***	18.88	42.16
Total negative events during the past 12 months:								
≤ 5						Reference		
6 **–** 10					0.50	3.19 ***	2.13	4.77
> 10					0.79	6.13 ***	3.69	10.18
Sexual orientation worries (yes)	0.17	1.48	0.78	2.81				
Parental separation/divorce (yes)	0.07	1.17	0.77	1.78				
Conflict with parents (yes)	0.27	1.87**	1.24	2.81				
Parental conflict (yes)	0.03	1.07	0.73	1.56				
Serious accident or illness of family member (yes)	-0.14	0.73	0.50	1.08				

Table 3.11 (continued)

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*β*	AOR	95% CI Lower	Upper
Death of family member (yes)	-0.11	0.77	0.51	1.18				
Family member suicide (yes)	-0.28	0.53	0.21	1.32				
Family member attempted suicide (yes)	0.39	2.48***	1.46	4.22				
School work problems (yes)	0.19	1.55*	1.06	2.25				
Truancy (> 5 days)	-0.26	0.55	0.29	1.02				
Sacked from school (yes)	-0.03	0.94	0.64	1.37				
Serious romantic relationship problems (yes)	-0.06	0.87	0.52	1.48				
Breakup (yes)	0.08	1.21	0.77	1.92				
Difficulty making/keeping friends (yes)	0.09	1.24	0.85	1.80				
Conflict with friends (yes)	0.03	1.07	0.73	1.57				
Serious accident or illness of close friend (yes)	0.07	1.17	0.79	1.71				
Death of friend (yes)	0.08	1.20	0.81	1.79				
Friend suicide (yes)	-0.10	0.79	0.29	2.19				
Friend attempted suicide (yes)	0.42	2.61***	1.57	4.34				
Bullied (yes)	0.16	1.45	0.99	2.13				
Physically abused (yes)	0.23	1.69**	1.16	2.47				
Sexually abused (yes)	0.08	1.21	0.78	1.87				
Trouble with police (yes)	0.16	1.43	0.59	3.43				

Table 3.11 (continued)

Variable	Model 1				Model 2			
	β	AOR	95% CI Lower	Upper	*β*	AOR	95% CI Lower	Upper
Other negative events during the past 12 months (yes)	0.06	1.16	0.77	1.75				
Random effect (intercept)	-1.39	0.041***	0.02	0.11	-1.34	0.046 ***	0.02	0.12

Notes:

β = Beta value

AOR = Adjusted Odds Ratio

CI = Confidence interval

*** p <0.001

** p <0.01

* p < 0.05

In model 2, the individual negative events experienced during the past 12 months were replaced with total negative events experienced during the past 12 months. Adolescents with non-heterosexual orientation (OR = 3.29; 95% CI = 1.42, 7.63), one or more alcohol use weekly (OR = 1.83; 95% CI = 1.16, 2.90), having a history of self-harm prior to the past 12 months (OR = 28.21; 95% CI = 18.88, 42.16), and having experienced six or more negative events during the past 12 months [6 – 10 negative events (OR = 3.19; 95% CI = 2.13, 4.77), and more than 10 negative events (OR = 6.13; 95% CI = 3.69, 10.18)] were more likely to report self-harm during the previous 12 months. Again, in both model 1 and model 2, having a history of self-harm prior to the past 12 months increases the odds of self-harm by 28 times, whereas gender and age showed no statistically significant associations with self-harm during the previous 12 months.

1.1.1.2.2. Multi-Level Negative Binomial Regression Analysis

The (single-level) negative binomial regression analysis performed earlier suggests that some of the adolescents' socio-demographic characteristics and negative life events have statistically significant associations with the frequency/counts of self-harm during the past 12 months. Thus, a multi-level negative binomial regression analysis (Finch et al., 2014; Hilbe, 2011; Hox, 2010) was performed to assess the significance of the schools'/street context's effects on the frequency/counts of self-harm during the previous 12 months. This followed a 2-step approach. In step 1, the likelihood ratio test (LR) comparing the null multilevel model with a null single-level model showed that the variation between clusters (schools and street context) in terms of the counts of self-harm during the previous 12 months was significantly non-zero (LR = 12.76, $p < .001$). Stated another way, the school and street contexts are significantly related to the counts of self-harm in adolescents. Again, the estimates of the clusters' effect with 95% CI resulting from the null multilevel model were further demonstrated by means of a caterpillar plot (Appendix 3.20).

In step 2, all the potential exposure variables were entered into two models: model 1 assessed the associations between adolescents' socio-demographic characteristics and individual negative events, and frequency of self-harm during the past 12 months, and model 2 examined the associations between adolescents' socio-demographic characteristics and total negative events, and the frequency of self-harm during the past 12 months.

In model 1, as shown in Table 3.12, living alone or with another person (IRR = 1.82; 95% CI = 1.12, 3.00), having one or more alcoholic drinks weekly (IRR = 1.51; 95%

CI = 1.11, 2.04), being in a romantic relationship (IRR = 1.44; 95% CI = 1.08, 1.90), having a history of self-harm prior to the past 12 months (IRR = 10.32; 95% CI = 8.13, 13.09), experiencing parental conflict (IRR = 1.32; 95% CI = 1.02, 1.70), difficulty making/keeping friends (IRR = 1.32; 95% CI = 1.03, 1.68), friend attempted suicide (IRR = 1.74; 95% CI = 1.26, 2.39), and experiencing other negative events (IRR = 1.45; 95% CI = 1.12, 1.87) were associated with higher frequency of self-harm during the past 12 months. However, reporting “myself or other person” as primary caretaker (IRR = 0.59; 95% CI = 0.36, 0.97), having more than four siblings (IRR = 0.75; 95% CI = 0.56, 0.99), having serious romantic relationship problems (IRR = 0.70; 95% CI = 0.49, 0.99) showed statistically significant association with lower frequency/counts of self-harm during the previous 12 months. The model shows further that even though friend suicide (IRR=1.56, 95% CI=0.93, 1.59) and trouble with police (IRR=1.51, 95% CI=0.88, 2.59) did not reach the chosen threshold of statistical significance, the IRRs and CIs showed a clinically significant evidence of an association with the counts/repetition of self-harm in the past year.

Model 2 revealed that female gender (IRR = 1.30; 95% CI = 1.01, 1.65), having one or more alcoholic drinks weekly (IRR = 1.68; 95% CI = 1.24, 2.24), history of self-harm prior to the past 12 months (IRR = 11.36; 95% CI = 8.96, 14.40), and experiencing six or more negative events during the past 12 months [6-10 negative events (IRR = 2.40; 95% CI = 1.78, 3.24), > 10 negative events (IRR = 3.55; 95% CI = 2.50, 5.05)] were associated with higher frequency/counts of self-harm during the past 12 months. However, being aged between 18 and 21 years (IRR = 0.65; 95% CI = 0.43, 0.99) was associated with lower frequency/counts of self-harm during the past 12 months. Across model 1 and model 2, having one or more alcoholic drinks weekly, and having a history of self-harm before the previous 12 months showed a statistically significant association with higher frequency of self-harm during the past 12 months. Also, the model shows that even though living alone or with other person (IRR=1.49, 95% CI=0.92, 2.41) did not reach the chosen threshold of statistical significance, the IRR and CI showed a clinically significant evidence of an association with the counts/repetition of self-harm in the past year.

Table 3.12. Multi-level negative binomial regression assessing associations between characteristics of adolescents (socio-demographics and negative events) and frequency of self-harm during the past 12 months.

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI		*β*	AIRR	95% CI	
				Lower	Upper			Lower	Upper
Gender	Male		Reference				Reference		
	Female	0.16	1.17	0.91	1.50	0.26	1.30*	1.01	1.65
Age group	13 – 15 years		Reference				Reference		
	16 – 17 years	-0.20	0.82	0.56	1.19	-0.23	0.80	0.54	1.16
	18 – 21 years	-0.32	0.73	0.47	1.12	-0.43	0.65*	0.43	0.99
Religious group	Christian		Reference				Reference		
	Muslim	-0.32	0.72	0.45	1.16	-0.32	0.73	0.46	1.17
Employment status	Unemployed		Reference				Reference		
	Employed	-0.46	0.63	0.36	1.10	-0.41	0.66	0.39	1.13
Living arrangement	One or both parents		Reference				Reference		
	Other relative	0.12	1.13	0.78	1.63	0.07	1.06	0.75	1.52
	Alone or with other person	0.60	1.82*	1.12	3.00	0.40	1.49	0.92	2.41
Primary caretaker	One or both parents		Reference				Reference		
	Other relative	-0.00	1.00	0.65	1.53	-0.08	0.92	0.61	1.40
	Myself or other person	-0.53	0.59*	0.36	0.97	-0.33	0.72	0.45	1.16
Primary caretaker's	Unemployed		Reference				Reference		
employment status.	Employed	-0.09	0.91	0.61	1.36	-0.15	0.86	0.59	1.26
Sexual orientation	Heterosexual		Reference				Reference		
	Non-heterosexual	0.20	1.22	0.74	2.02	0.22	1.25	0.76	2.06
Weekly cigarettes	Never/stopped smoking		Reference				Reference		
	≥ 1 cigarette	0.27	1.31	0.42	4.06	0.76	2.14	0.75	6.08
Weekly alcohol use	Never drink		Reference				Reference		
	One or more drinks	0.41	1.51**	1.11	2.04	0.52	1.68***	1.24	2.27

Table 3.12 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI Lower	Upper	*β*	AIRR	95% CI Lower	Upper
Illicit drug use	Never take drugs		Reference				Reference		
	Took illicit drug	-0.09	0.92	0.54	1.55	0.07	1.07	0.63	1.81
Family structure	My father has one wife		Reference				Reference		
	My father has more than one wife	0.01	1.00	0.76	1.34	0.06	1.07	0.83	1.37
Sib size	0 – 4 siblings		Reference				Reference		
	> 4 siblings	-0.29	0.75*	0.56	0.99	-0.27	0.76	0.58	1.00
School residential status	Boarding		Reference				Reference		
	Day student	0.09	1.10	0.79	1.52	0.09	1.10	0.78	1.53
In romantic relationship	No		Reference				Reference		
	Yes	0.36	1.44*	1.08	1.90	0.15	1.16	0.90	1.48
Self-harm prior to the past 12	No		Reference				Reference		
months	Yes	2.33	10.32***	8.13	13.09	2.43	11.36***	8.96	14.40
Total negative events during	≤ 5						Reference		
the past 12 months:	6 – 10					0.88	2.40***	1.78	3.24
	> 10					1.27	3.55***	2.50	5.05
Sexual orientation worries	No		Reference						
	Yes	0.27	1.31	0.90	1.91				
Parental separation divorce	No		Reference						
	Yes	0.01	1.01	0.77	1.32				
Conflict with parents	No		Reference						
	Yes	0.26	1.30	0.99	1.71				

Table 3.12 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI		*β*	AIRR	95% CI	
				Lower	Upper			Lower	Upper
Parental conflict	No		Reference						
	Yes	0.28	1.32*	1.02	1.70				
Serious accident or illness of family member	No		Reference						
	Yes	0.04	1.04	0.80	1.34				
Death of family member	No		Reference						
	Yes	-0.09	0.91	0.70	1.19				
Family member suicide	No		Reference						
	Yes	-0.38	0.69	0.40	1.18				
Family member attempted suicide	No		Reference						
	Yes	0.12	1.13	0.81	1.57				
School work problems	No		Reference						
	Yes	0.22	1.25	0.97	1.60				
Truancy	0 – 5 days		Reference						
	> 5 days	-0.22	0.80	0.56	1.15				
Sacked from school	No		Reference						
	Yes	0.04	1.04	0.80	1.33				
Serious romantic relationship problems	No		Reference						
	Yes	-0.36	0.70*	0.49	0.99				
Breakup	No		Reference						
	Yes	0.18	1.20	0.89	1.61				
Difficulty making/keeping friends	No		Reference						
	Yes	0.28	1.32*	1.03	1.68				
Conflict with friends	No		Reference						
	Yes	-0.01	0.99	0.76	1.29				

Table 3.12 (continued)

Variable	Category	Model 1				Model 2			
		β	AIRR	95% CI Lower	Upper	*β*	AIRR	95% CI Lower	Upper
Serious accident or illness of close friend	No		Reference						
	Yes	-0.11	0.89	0.70	1.15				
Death of friend	No		Reference						
	Yes	0.05	1.05	0.81	1.36				
Friend suicide	No		Reference						
	Yes	0.44	1.56	0.93	1.59				
Friend attempted suicide	No		Reference						
	Yes	0.55	1.74***	1.26	2.39				
Bullied	No		Reference						
	Yes	0.22	1.25	0.97	1.50				
Physically abused	No		Reference						
	Yes	0.19	1.21	0.94	1.56				
Sexually abused	No		Reference						
	Yes	0.12	1.13	0.85	1.49				
Trouble with police	No		Reference						
	Yes	0.41	1.51	0.88	2.59				
Other negative events	No		Reference						
	Yes	0.37	1.45**	1.12	1.87				
Random effect (intercept)		-1.24	0.058***	0.03	0.11	-1.13	0.074***	0.04	0.14

Notes:
β = Beta value
AIRR = Adjusted Incidence Rate Ratio
CI = Confidence interval
*** p <0.001, ** p <0.01, * p < 0.05.

1.1.2. Clustering of Adolescents

The final 3-cluster solution included 14 socio-demographic variables[26] (e.g., gender, age group, etc.), eight negative events[27] (e.g., conflict with parents, sexually abused, etc.), and self-harm "before", and "during" the past 12 months. A closer inspection of the final 3-cluster solution showed that these 24 variables had higher densities and as such provided a clear descriptive separation within the three clusters (Kaufman & Rousseeuw, 2005). Table 3.13 provides a summary of the characteristics of the three clusters.

Cluster 1 (n = 837): All the adolescents in cluster 1 are in-school (100%) and taken care of by one or both parents (100%) who are employed (97%). The majority of the adolescents here are males (54%), aged 16–17 years (70%), not involved in any paid work (99%), and live with one or both parents (93%). Their father has one wife (89%), they have 0-4 siblings, are not in romantic relationships (79%), they are day students (70%), never drink alcohol (95%), and they self-identify as Christian (91%), and heterosexual (99%). Less than 10% of the adolescents in this cluster (predominantly males) responded "yes" to four of the eight negative events experienced during the previous 12 months: conflict with parents (9%), family member attempted suicide (3%), friend attempted suicide (4%), and having been sexually abused (5%). Similarly, less than 20% of the adolescents here reported school work problems (19%), having been bullied (19%), and physically abused (14%), while 14% reported that they had had conflict with friends during the previous 12 months. Four percent of the adolescents in this cluster reported a history of self-harm prior to the past 12 months, and five percent reported self-harm during the past 12 months. Cluster 1 is thus described as a low self-harm risk cluster with low self-harm prevalence, given the low proportions of adolescents in this cluster who reported negative events and self-harm.

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[26] The 14 socio-demographic variables were adolescent groups, gender, age groups, religious groups, employment status, living arrangement, primary caretaker, primary caretaker's employment status, sexual orientation, family structure, sib size, school residential status, in romantic relationship, and weekly alcohol use.

[27] The eight negative events during the previous 12 months were conflict with parents, family member attempted suicide, school work problems, conflict with friends, friend attempted suicide, bullied, physically abused, and sexually abused.

Table 3.13. Characteristics of adolescents in cluster analysis (Socio-demographics, negative events, and self-harm).

Variable	Category	Cluster 1 n = 837	Cluster 2 n = 481	Cluster 3 n = 413
Socio-demographics				
Adolescent groups	School adolescents	100%	93%	98%
	Street-connected adolescents	0	7%	2%
Gender	Male	54%	51%	40%
	Female	46%	49%	60%
Age group	13 – 15 years	16%	7%	8%
	16 – 17 years	70%	44%	60%
	18 – 21 years	14%	49%	32%
Religious group	Christian	91%	91%	93%
	Muslim	9%	9%	7%
Employment status	Unemployed	99%	85%	95%
	Employed	1%	15%	5%
Living arrangement	One or both parents	93%	45%	76%
	Other relative	5%	43%	18%
	Alone or with other person	2%	12%	6%
Primary caretaker	One or both parents	100%	54%	81%
	Other relative	0	32%	10%
	Myself or other person	0	14%	9%
Primary caretaker's employment status	Unemployed	3%	13%	10%
	Employed	97%	87%	90%
Sexual orientation	Heterosexual	99%	98%	94%
	Non-heterosexual	1%	2%	6%
Family structure	My father has one wife	89%	57%	64%
	My father has more than one wife	11%	43%	36%
Sib size	0 – 4 siblings	85%	54%	75%
	> 4 siblings	15%	46%	25%

Table 3.13. (continued)

Variable	Category	Cluster 1 n = 837	Cluster 2 n = 481	Cluster3 n = 413
Socio-demographics (continued)				
School residential status	Boarding	30%	5%	21%
	Day student	70%	95%	79%
In romantic relationship	No	79%	56%	41%
	Yes	21%	44%	59%
Weekly alcohol use	Never drink	95%	86%	72%
	One or more drinks	5%	14%	28%
Negative Events				
Conflict with parents	No	91%	86%	47%
	Yes	9%	14%	53%
Family member attempted suicide	No	97%	95%	77%
	Yes	3%	5%	23%
School work problems	No	81%	62%	37%
	Yes	19%	38%	63%
Conflict with friends	No	70%	59%	24%
	Yes	30%	41%	76%
Friend attempted suicide	No	96%	96%	75%
	Yes	4%	4%	25%
Bullied	No	81%	76%	44%
	Yes	19%	24%	56%
Physically abused	No	86%	67%	37%
	Yes	14%	33%	63%
Sexually abused	No	95%	87%	54%
	Yes	5%	13%	46%
Self-harm				
Self-harm prior to the past 12 months	No	96%	95%	62%
	Yes	4%	5%	38%
Self-harm during the past 12 months	No	95%	94%	49%
	Yes	5%	6%	51%

Cluster 2 (n = 481): Predominantly, adolescents in this cluster are in-school (93%), aged between 18 and 21 years (49%), self-identify as Christian (91%), heterosexual (98%), day student (95%), and the majority never drink alcohol (86%). There are fairly similar proportions of males (51%) and females (49%) in this cluster. Seven percent identify as street-connected, 12% live alone or with another person, 15% are employed, 46% have more than four siblings, and their father has more than one wife (43%). Regarding negative events experienced during the previous 12 months, less than 25% reported family member attempted suicide (5%), friend attempted suicide (4%). conflict with parents (14%), been bullied (24%), and sexually abused (13%). Less than 50% reported school work problems (38%), conflict with friends (41%) and having been physically abused (33%) in the last 12 months. Finally, less than 10% of the adolescents in this cluster reported a history of self-harm prior to the past 12 months (5%) and self-harm during the past 12 months (6%). Thus, cluster 2 is described as a moderate self-harm risk group with low self-harm prevalence.

Cluster 3 (n = 413): Cluster 3 is described as a high self-harm risk group with high self-harm prevalence, as there are higher proportions of adolescents in this cluster across all the eight negative events and self-harm. Specifically, the majority of the adolescents in cluster 3 are in-school (98%), females (60%), aged 16–17 years (60%), self-identify as Christian (93%) and heterosexual (94%); they are day students (79%), not involved in any paid work (95%); 76% live with one or both parents, and 81% are taken care of by one or both parents, who are employed (90%). However, at least 25% of this cluster report that their father has more than one wife (36%), they have one or more alcoholic drinks weekly (28%), have less than five siblings (75%), and more than half (59%) are in a romantic relationship. As regard the negative events experienced during the previous 12 months, more than half (>50%) of the adolescents in cluster 3 reported conflict with parents (53%), conflict with friends (76%), school work problems (63%), having been bullied (56%) and physically abused (63%). More than 20% of this cluster reported family member attempted suicide (23%), friend attempted suicide (25%), and sexual abuse (46%) during the previous 12 months. Finally, 38% of the adolescents here reported a history of self-harm prior to the past 12 months, while 51% reported self-harm during the past 12 months.

3.4. Discussion

To the best of my knowledge, this study represents the first research effort at providing evidence from Ghana on self-harm (defined without regard to the purpose of the act) in a regionally representative non-clinical sample of in-school and street-connected adolescents in the Greater Accra region. As discussed below, the evidence shows various prevalence estimates of self-harm and describes some of the common factors associated with self-harm in the two adolescent groups studied.

3.4.1. Summary of key findings

The present study sought to estimate the period prevalence of self-harm and to describe some of the associated key factors in two adolescent groups in the Greater Accra region of Ghana: adolescents in second cycle schools and street-connected adolescents. Overall, one in five adolescents reported having self-harmed in their lifetime (representing approximately one out of five in-school adolescents, and one in eight street-connected adolescents). Similarly, one in six of the adolescents reported an episode of self-harm during the previous 12 months (i.e., approximately one out of five in-school adolescents, and one in 11 street-connected adolescents). The overall 1-month prevalence estimate was 3.1% (i.e., 3.5% among in-school adolescents and 1.0% in street-connected adolescents). Thus, across the total sample, the period prevalence estimates were higher among in-school adolescents, females, and adolescents aged between 16 and 21 years, but relatively lower among street-connected adolescents, males, and adolescents aged 13–15 years.

Although self-injury and self-poisoning were the common methods of self-harm reported, self-injury was the most frequently used method. The predominant method of self-injury was self-cutting; alcohol and medications were the main methods of self-poisoning (more males used alcohol and drugs, while more females used medications). Whereas some in-school adolescents reported the use of self-harm methods other than self-injury and self-poisoning (e.g., drowning, starvation, stopping required medication/treatment), some street-connected adolescents reported the multiple use of both self-injury and self-poisoning.

Intrapersonal reasons (mainly to get relief from unbearable thoughts) were the frequently stated reasons for the last episode of self-harm. While more street-connected adolescents indicated intrapersonal reasons for their last episode of self-harm (e.g., “I wanted to sleep for a while”, “I wanted to die”), more in-school adolescents and female participants reported interpersonal reasons (e.g., “I wanted

to know if someone really cared about me", "I wanted to persuade someone to change his/her mind").

The results of the multivariable analyses showed several factors that had statistically significant associations with self-harm in the previous 12 months: female gender, non-heterosexual orientation, history of self-harm, conflict with parents, family member attempted suicide, friend suicide, friend attempted suicide, school work problems, physical abuse, bullying, alcohol use, living alone or with a non-relative, being in a romantic relationship, experiencing parental conflict, having difficulty making/keeping friends, and experiencing multiple (six or more) negative events during the previous 12 months. Furthermore, having more than four siblings, experiencing serious romantic relationship problems, having self or a non-relative as primary caretaker, and being aged between 18 and 21 years were significantly associated with the counts/repetition of self-harm within the previous 12 months.

Also, although more in-school adolescents than street-connected adolescents reported self-harm during the past 12 months, being in-school or street-connected did not show any statistically significant association with self-harm during the past 12 month or repetition of the behaviour, in the multivariable statistical modelling.

Cluster analysis of the data to describe the profile of the adolescents showed that adolescents at elevated risk of self-harm were mainly in-school older females (aged 16 – 21 years), who experienced multiple negative events, were in romantic relationships, used alcohol weekly, and had a history of self-harm prior to the previous 12 months.

3.4.2. Prevalence estimates of self-harm

Generally, the prevalence estimates of self-harm (lifetime = 20.2%; 12-month = 16.6%, and 1-month = 3.1%) reported in the present study are comparable to averages of estimates reported by recent global systematic reviews of the literature. For example, a most recent systematic review shows a lifetime prevalence range of 5% – 48.7%, with a mean of 16.4%; a 12-month prevalence estimate range of 6% – 33.9%, with an average of 18.2% (Valencia-Agudo et al., 2018). Also, the estimates in the present study are comparable to those reported recently among adolescents in the United States (12-month prevalence estimate = 17.6%: Monto, McRee & Deryck, 2018) and in the cross-country comparative primary studies across Europe (lifetime prevalence estimate = 27.6%), with higher estimates reported among female than male adolescents (Brunner et al., 2014). However, compared to estimates from Australia [lifetime = 10.9%%; 12-month = 8.0% (Zubrick et al., 2016)], the estimates of the present study are higher. Regionally, the 12-month

prevalence estimate of the present study (16.6%) is comparable to estimates from the African region [19.4% (Koyanagi et al., 2019; Vancampfort et al., 2019) and 19.3% (Uddin et al. 2019)] and across LAMICs [17% (Uddin et al. 2019)].

Generally, the prevalence estimates of self-harm among street connected adolescents reported in the present study (lifetime = 12.2%; 12-month = 9.4%, and 1-month = 1.0%) are similar to the global average estimate [lifetime = 12.4% (Hodgson et al., 2013)] and estimates from LAMICs [lifetime ranges between 10% and 23.8% (Woan et al., 2013)]. However, specifically, the 12-month prevalence estimate among the street-connected adolescents in the present study (9.4%) is significantly lower, compared to the current 12-month prevalence estimate (19.8%) from Uganda (Swahn et al., 2012).

Even though the averages of estimates reported by previous studies from LAMICs and high-income countries are comparable to the estimates of the present study, the wider variations of the ranges of the previously reported estimates are to be expected, given the differences between the present study and the previous studies in terms of several factors including sample type, sampling technique and sample size, and the exact method used to assess self-harm. However, regardless of the differences in the prevalence estimates reported by current global reviews of the literature and primary studies from other parts of the world, the prevalence estimates reported among the adolescent groups in the present study add to and support the evidence that self-harm is currently a public health problem that is common among adolescents (e.g., Brown & Plener, 2017; Mars et al., 2019; Patel et al., 2018; Patton et al., 2016; Valencia-Agudo et al., 2018).

While it is difficult to make comparisons between the prevalence estimates of the present study and estimates from the large number of international studies (particularly, from high-income countries), it may be more meaningful to discuss the prevalence estimates of the present study in the light of the evidence from sub-Saharan Africa (as reported by the systematic review of this thesis, Chapter 2) and within the context of available studies to date from Ghana. Although the evidence from the systematic review (Chapter 2) showed considerable variations within and across the countries and sub-regions of sub-Saharan Africa, generally, the reported prevalence estimates of the present study fall within the overall and sub-regional interquartile ranges of prevalence estimates reported by the systematic review. Apart from the overall 1-month prevalence estimate of the present study (3.1%) – which is lower, relative to the overall 1-month median prevalence estimate (median: 6.3%. IQR: 3.1% – 26.4%) reported by the systematic review, the overall lifetime

prevalence estimate (20.2%) reported by the present study is relatively higher than the overall lifetime median prevalence estimate (median: 13.5%. IQR: 7.4% – 16.8%) reported by the systematic review. The overall 12-month prevalence estimate (16.6%) reported by the present study is relatively similar to the overall 12-month median prevalence estimate reported by the systematic review (median: 14.3%. IQR: 11.1% – 22.2%). However, the overall 12-month prevalence estimate of the present study (16.6%) is lower, compared to the 12-month median prevalence estimate (median: 21.1%. IQR: 14.5% – 27.3%) reported by the systematic review from Western sub-Saharan Africa (where Ghana is located).

Thus far, no previous study from Ghana (as can be said of the global and sub-Saharan African literature) has concurrently compared in-school and street-connected samples of adolescents in terms of self-harm prevalence estimates. As shown in Chapter 2, there is only one school-based study that reports lifetime prevalence estimate from Ghana; it estimates the lifetime prevalence of attempted suicide among 383 students in the Volta region of Ghana to be 8.1% (Nanewortor, 2011). Relatively, the school-based lifetime prevalence estimate of the present study (22%) is higher.

The available published school-based studies from Ghana have also reported varied 12-month prevalence estimates (Asante et al., 2017; Baiden et al., 2018; Liu et al., 2018; Koyanagi et al., 2019; Vancampfort et al., 2019). The 12-month prevalence estimate (18.2%) reported among in-school adolescents in the present study is relatively lower than the 12-month estimates reported in previous school-based studies from Ghana: 22.2% (Asante et al., 2017), 21.1% (Baiden et al., 2018), 26.4% (Liu et al., 2018), and 26.6% (Koyanagi et al., 2019; Vancampfort et al., 2019). Notably, the 12-month prevalence estimates reported by these previous studies were all based on the same dataset, the 2012 Ghana Global School-based student Health Survey (GGSHS). The difference between the prevalence estimates of the present study and the previous school-based studies from Ghana could be explained by sampling and geographical variations. In-school adolescents in the present study were sampled from 20 randomly selected schools within the 10 administrative districts of the Greater Accra region (in the south) only. The adolescents were drawn from both private and public second cycle schools, comprising senior high schools, technical, vocational and business schools, with the majority (78.2%) being day students. However, the adolescents in the 2012 GGSHS were drawn from 25 public senior high schools only across the 10 regions of the country, with two-thirds of the adolescents being boarders. Similarly, the only study reporting lifetime prevalence estimate from Ghana (Nanewortor, 2011) also

involved only senior high school students from the Volta region, with no students from technical, vocational and business schools.

Similarly, the available published street-based study from Ghana has reported only 1-month prevalence estimate (Asante & Meyer-Weitz, 2017). The 1-month prevalence estimate of self-harm (1.0%) among street-connected adolescents in the present study is significantly lower compared to 26.4% reported by Asante and Meyer-Weitz (2017) from Accra. Even though the present study adopted the researcher-administered approach, similarly as used by Asante and Meyer-Weitz (2017) to access the survey data, the surprising difference in the estimates could be explained in terms of other variations related to sample, sampling procedures and setting.

The present study sampled 384 street-connected adolescents across the Greater Accra region, specifically, from four key charity facilities that work with this population within the region, and from 35 of the 67 street census enumeration areas in the region. The adolescents in the present study were aged 13 – 21 years; evidence from a recent systematic review of longitudinal studies suggests that, self-harm peaks in adolescents around mid-ages 15 – 16 years and decreases towards late-ages 18 – 19 years to early adulthood (Plenner et al., 2015). In contrast, Asante and Meyer-Weitz (2017) sampled 227 street-connected young people aged 8 – 16 years in the year 2013 from street locations within only one district (out of the 10 districts) in the Greater Accra region.

More pointedly, 16.4% (n = 63) of the street-connected adolescents in the present study were accessed in charity facilities, whilst 71.3% (n = 229) of those sampled from the street census enumeration areas indicated that they frequently attended at least one charity facility. In the Greater Accra region, street-connected young people who attend charity facilities receive free meals and clothes, and pro-resilience support including counselling, life skills training and other psychosocial support (DSW et al., 2011; Mizen & Ofosu-Kusi, 2010; Orme & Seipel, 2007). It could be suggested therefore that, compared to the participants of Asante and Meyer-Weitz (2017), perhaps, the participants in the present study were protected, more resilient and better positioned to avoid self-harm, due to the support they receive from charity facilities.

Relatedly, whereas the participants involved in the study by Asante and Meyer-Weitz (2017, p. 35) were “homeless adolescents who were living entirely on the street without contact with family members”, 78.9% of the street-connected adolescents in the present study maintained some form of contact with their

families, which is consistent with findings of key studies from Ghana that, besides those who were born and live on the streets with their families, most street-connected young people found in the Greater Accra region still maintain some form of contact with their families of origin – for example, through periodic home visits or telephone calls (e.g., Agyei, Kumi & Yeboah, 2016; Ahlvin, 2012; Awumbila & Ardayfio-Schandorf, 2008; DSW et al., 2011; Hatløy & Huser, 2005; Markwei & Rasmussen, 2015; Orme & Seipel, 2007). This difference is critical, as it may be pointing to the possibility that street-connected young people who keep contact with their families are more likely to receive some form of family support if needed.

Also, at the time of the data collection for the present study, adolescent suicide was the topical issue of concern across Ghana (Kubi, 2017; Quarshie et al., 2019). Given the direct connection between self-harm and suicide (Andover et al., 2012; Franklin & Nock, 2016), and knowing that intentional self-destructive behaviours are morally tabooed and legally criminalised in Ghana (Adinkrah, 2013; Mishara & Weisstub, 2016), the street-connected participants in the present study might have provided guarded and socially desirable responses to the questions asking about self-harm.

Another surprising finding related to the prevalence estimates is that, within the present study, the estimates among street-connected adolescents (lifetime = 12.2%, 12-month = 9.4%, and 1-month =1.0%) are significantly lower than the estimates reported among in-school adolescents (lifetime = 22.0%, 12-month = 18.2%, and 1-month = 3.5%). First of all, irrespective of the differences in the estimates, this finding suggests that self-harm is a common problem in both street-connected and in-school adolescents in the Greater Accra region of Ghana. The difference in the estimates could be explained by the data collection strategy used. The researcher-administered approach to the survey of the street-connected adolescents might have led to more socially desirable responses from the street-connected adolescents, compared to the self-administered approach adopted for in-school adolescents. Essentially, these evidence could be demonstrating that the study by Asante and Meyer-Weitz (2017) may be less than ideally valid.

Also, although no published evidence exists in Ghana that compares resilience between out-of-school and in-school adolescents, available evidence suggests that street-connected young people in Accra have high perceived resilience, which serves to protect them against emotional problems and health risk behaviours, including sexual risk behaviours, violence, and suicidal ideations

(Asante & Meyer-Weitz, 2015; Asante, Meyer-Weitz & Petersen, 2015; De-Graft Aikins & Ofori-Atta, 2007; Mizen & Ofosu-Kusi, 2013).

While the lower prevalence estimates of self-harm among street-connected adolescents may be a reflection of high resilience among this population, it is also important to underscore the fact that this resilience among street-connected young people is not necessarily an indication of "good health". Evidence suggests that street-connected young people in Accra use various unhealthy mechanisms to cope with emotional problems and the effects of the harsh realities of street living; they use alcohol and drugs, smoke cigarettes, engage in transactional sex, keep multiple sexual partners, have unprotected sex, and engage in physical fights (Asante, 2015; Asante, Meyer-Weitz & Petersen, 2014, 2016; Awumbila & Ardayfio-Schandorf, 2008; De-Graft Aikins & Ofori-Atta, 2007; DSW et al., 2011; Mizen & Ofosu-Kusi, 2010). Therefore, the street-connected adolescents in the present study may score lower on (intentional) self-harming behaviours, but the use of alcohol and illicit drugs and engagement in other health risk behaviours could be equally harmful at least in the long-term. Perhaps, evidence from qualitative studies (e.g., Chapter 4 of this thesis) could provide further useful reflections on the factors that could be accounting for this difference in estimates between the two groups of adolescents.

3.4.3. Methods of self-harm

The finding of the present study that self-injury is the predominant method of self-harm reported by the adolescents is consistent with the global literature. Available evidence suggests that community samples of adolescents who self-harm are more likely to use self-cutting than self-poisoning; even though severe cutting can result in hospital admissions, often adolescents who self-poison are likely to present to hospitals due to the high medical lethality often associated with most means of self-poisoning (Barrocas et al., 2012; Beckman et al., 2018; Brunner et al., 2014; Chartrand et al., 2016; Cully et al., 2019; Laukkanen et al., 2009; NICE, 2012; Robinson, 2017; Rodham et al., 2004).

Self-injury: In terms of self-injury, adolescent groups, and gender, the finding of the present study shows that more in-school adolescents reported using cutting and hitting body, whereas hanging and stepping into traffic were predominantly reported by street-connected adolescents. Perhaps the motive to die could be implicated for the choice of self-harm methods between the two groups of adolescents. Comparatively, although severe cutting and hitting body severely (e.g., head banging) can be violent and lethal, hanging and stepping into a moving traffic

are more violent with high lethality (Ougrin et al., 2010). As discussed in the next section (Section 3.4.4), 23.4% of the street-connected adolescents reported "wanted to die" as a single reason for their last episode of self-harm, whilst 11.3% in-school adolescents reported the same reason. Recent evidence from Ghana suggests that hanging is the predominant method of suicide in adolescents (Der, Dakwah, Derkyi-Kwarteng & Badu, 2016; Quarshie et al., 2015). Given the fact that the streets remain a core part of the everyday life of street-connected adolescents, the high frequency of stepping into moving traffic as a method of self-harm among this group is not surprising. Thus, street-connected adolescents in this study tend to use methods of self-harm that involve high risk of death, compared to self-harm methods used by in-school adolescents. This could mean that although relative to in-school adolescents the frequency of self-harm is lower among street-connected adolescents, street-connected adolescents tend to have more suicidal motives and seem more determined to die by self-harm. Perhaps because street-connected adolescents are more resilient, they are able to cope (including through the use of drugs, alcohol, transactional sex etc.) with issues which for the school adolescents would be more distressing. But when that coping fails, the impact is relatively greater. It seems almost as though street-connected adolescents have a higher tolerance threshold for unbearable thoughts, but when that threshold is reached, they opt for more serious methods of self-harm.

In gender terms, more females reported using cutting, whilst more males reported hitting body. This finding supports the consistent evidence from both clinical and non-clinic-based literature that young males tend to use relatively more violent means of self-harm than young females (e.g., Barrocas et al., 2012; Beckman et al., 2018; Brunner et al., 2014; Green, Kearns, Ledoux, Addis & Marx, 2018; Tsirigotis, Gruszczynski & Tsirigotis, 2011). The choice of violent self-harm methods by males has been linked to the hegemonic masculinity norms of bravery, aggression/violence, self-reliance, control and dominance (Fox, Millner, Mukerji & Nock, 2018; Green et al., 2018; Tsirigotis, 2018), which appear relevant to the Ghanaian situation. The socialisation of boys in Ghana leans towards and subscribes to these masculinity norms, which have been found to underlie direct and indirect self-destructive behaviours among males in the country (Acquah, Lloyd, Davis & Wilson, 2014; Adinkrah, 2012; Ampofo & Boateng, 2007; Andoh-Arthur, Knizek, Osafo & Hjelmeland, 2018). In contrast, the importance of seeing blood has been identified as underlying cutting among female adolescents; females tend to use methods of self-injury that result in bleeding, while males choose methods that do not involve bleeding (Bresin & Schoenleber, 2015; Sornberger,

Heath, Toste & McLouth, 2012; Tsirigotis et al., 2011). Although this explanation seems consistent with portions of the data in the present study, it does not fully explain the gender difference in the choice of self-injury methods, as both male (33.3%) and female (28.8%) adolescents in this study reported using multiple methods of self-injury involving bleeding and non-bleeding. It seems from the present study that some of the adolescents' choice of self-injury methods was merely opportunistic and not influenced by gender. Thus, this bleeding or blood-letting explanation requires further research evidence, because the supposed gender difference still remains unclear in the literature (Bresin & Schoenleber, 2015; Glenn & Klonsky, 2010; Naoum et al., 2016).

Self-poisoning: In terms of the predominant means of self-poisoning, adolescent groups, and gender, this study shows that more in-school adolescents reported using alcohol and poisons/caustic substances, whereas more street-connected adolescents reported using medications and illicit drugs. Similarly, more females reported using medications and poisons/caustic substances, whilst more males reported using alcohol and illicit drugs. These differences could be explained with reference to access to the means of self-poisoning. In-school adolescents have access to poisons/caustic substances at home, as these are available in the form of household cleaning agents and disinfectants, and household pest control chemicals (e.g., rat poison), which are often kept within the reach and sight of young people in homes. In Ghana, these substances are typically kept in bathrooms and kitchen areas. In the performance of household chores, (female) adolescents use caustic substances as cleaning agents, and household pest control chemicals are often not locked away. Thus, during an acute situational crisis involving despair, anger, impulsivity, unbearable emotional pain or hopelessness, access to these substances is always within reach for self-harm by the adolescent at home. In the street context, an adolescent experiencing self-harm crisis can buy these poisons at cheaper prices in the open market.

Adolescents' access to alcohol (alcoholic drinks) in Ghana is almost unfettered and problematic. The chief reason is that, until recently, the country had no national alcohol policy. Ghana adopted a written national alcohol policy in December 2016, and was launched in March 2017 (Ghana News Agency, 2017; Ministry of Health, 2016; WHO, 2018), the same year in which the survey for the present study was conducted. Recent emerging evidence shows that the implementation of the policy is already facing difficulties, as the proliferation of radio, newspaper, magazine, and TV advertisements (usually linking alcohol use to enhanced sexual performance) continues unabated, with both out-of-school and

school-going children and adolescents remaining the most vulnerable group to the influences of these advertisements and sales promotion activities (Asante & Kugbey, 2019; Hormenu, Hagan Jnr. & Schack, 2018; Jernigan, 2019; Lapierre et al., 2017). Traditionally also, the use of alcoholic beverages remains key during naming ceremonies, parties, funeral rites and other customary events, and generally at social functions attended by both the young and old. At home, underage children are sent by significant adults to buy alcoholic drinks; alcoholic beverages are kept in domestic fridges, and some adult relatives (e.g., parents and adult siblings) use alcoholic beverages as an appetiser at family meal times, whilst others drink into stupor occasionally in the full view of children and adolescents. Given these circumstances, adolescents learn to use alcohol mainly through social modelling. In the present study, the bivariate analysis showed that male adolescents were more likely than females to report weekly alcohol use. For most adolescent males, alcohol use is also an indication of masculinity (Hormenu et al., 2018; Obot & Room, 2005). To self-harm, therefore, in-school adolescents can access alcoholic drinks at home and at social functions, while street-connected adolescents could buy any alcoholic drink of choice from their wage or savings, as the law on minimum age at which a young person can buy alcohol is generally not enforced by sellers, particularly in the street context.

Also, access to medicines by adolescents in Ghana is unrestricted. Specifically, at home, adolescents (particularly, girls) provide care for aged parents or grandparents, who are usually placed on prescribed medications for chronic, age-related health conditions (e.g., diabetes, stroke, and heart diseases). Where the significant adult's health condition is memory related, the adolescent is required to provide reminders and assist with the administration of medications. The implication is that, at home, adolescents know where medicines are kept (usually, not in a locked first aid box). Access is thus unrestricted in times of self-harm crisis. On the streets, untrained and unlicensed vendors of medicines and chemicals abound; some operate in small shops, while others hawk within markets, bus stations, and slums. These street vendors deal mostly in counterfeit over-the-counter and prescription medicines, and regulating their widespread activities is still a challenge for government (Kretchy, Owusu-Daaku & Danquah, 2014; Salm-Reifferscheidt, 2018). It is common knowledge in Ghana that medicines sold by these street vendors are cheaply priced, and one does not need a prescription to buy medicines from them (Klein, 2019; Yorke, Oyebola, Otene & Klein, 2019).

The finding of the present study that the use of illicit drugs to self-harm was frequently reported by street-connected adolescents and male participants is not

surprising. Available evidence from school-based studies in Ghana indicates that more adolescent boys than girls frequently use illicit drugs (e.g., Doku, Koivusilta & Rimpelä, 2012). Among street-connected young people in Accra, illicit drug use has been found to be exceptionally common (Asante et al., 2014) as has also been found generally among street-connected young people across LAMICs (Embleton et al., 2013; Woan et al., 2013). Compared to in-school adolescents, street-connected adolescents are much more likely to use illicit drugs, given that most illicit drug trade occurs in the street context (Seffrin & Domahidi, 2014). Additionally, some street-connected adolescents (particularly, boys) are engaged as salespersons by adult dealers on the streets (Aguilar, 2014). Thus, generally, access to illicit drugs is almost unrestricted in the street context, thereby making it more likely that street-connected (male) adolescents than in-school adolescents could self-harm using illicit drugs.

3.4.4. Reasons for self-harm

The findings of the present study suggest that in-school and street-connected adolescents in the Greater Accra region are likely to report more intrapersonal reasons for their self-harm (e.g., “my thoughts were unbearable, I could not endure them any longer”, “I wanted to sleep for a while”, “I wanted to die”) than interpersonal reasons (e.g., “I wanted to know if someone really cared about me”, “I wanted to persuade someone to change his/her mind”) and also at odds with the interpersonal negative life events reported by many of the adolescents. This finding is consistent with the findings of the most recent meta-analysis of the global literature (Taylor et al., 2018), the pooled results from the cross-national Child and Adolescent Self-Harm in Europe study (Scoliers et al. 2009), recent findings from Ireland (Doyle et al., 2017; Rasmussen et al., 2016), and earlier findings from Uganda (Hjelmeland et al., 2008), all of which, using similar checklist of reasons, also identified intrapersonal reasons as the most commonly endorsed motives by young people who self-harm (bearing in mind though that the earlier study by Hjelmeland et al. [2008] involved mostly adult participants). This possibly suggests that the motive to reduce emotional pain (possibly precipitated by negative interpersonal circumstances) remains an overarching and a consistent reason reported by adolescents as informing their self-harm. This finding could point to a support for the emotion-regulation explanatory model of self-harm set out in Chapter 1 (Section 1.2.2) of this thesis. The emotion-regulation explanatory model posits that self-harm is motivated by the desire to alleviate negative emotions (Klonsky, 2007; Klonsky & Muehlenkamp, 2007; Nock, 2009, 2010; Taylor et al., 2018). Despite the fact that self-harm informed by emotion regulation motive leads

to immediate relief from experiences of negative emotions, evidence suggests that this is problematic as adolescents who obtain the highest emotional relief tend to self-harm frequently for the same reason, a pattern which is associated with poor mental health outcomes during adulthood (Klonsky, 2007; Moran et al., 2012; Plener et al., 2015). It is however noteworthy that, although the dichotomous categorisation of the endorsed reasons into intrapersonal and interpersonal motives in the present study is unable to show a clear, independent, mutually exclusive distinction among the reported reasons, this categorisation provides a much more pragmatic way of understanding adolescents' reasons for self-harm (Taylor et al., 2018).

While both female and male participants in the present study reported both intrapersonal and interpersonal reasons for their self-harm, it was also evident that more female than male adolescents reported generally more of both intrapersonal and interpersonal reasons for their self-harm. First of all, this may be indicative of a support for two key facts that, concurrently, adolescents most often report multiple reasons for their self-harm (Doyle et al., 2017; Edmondson et al., 2016; Rasmussen et al., 2016; Taylor et al., 2018), and not all instances of self-harm are suicide-intended (Kapur et al., 2013; Glenn et al., 2017). Next, that female adolescents generally reported more of both intrapersonal and interpersonal reasons for their self-harm, supports existing evidence in the area that female adolescents are more emotionally literate and inclined towards the need to explain their self-harm behaviour and to communicate and admit to various reasons for their self-harm (Scoliers et al. 2009; Doyle et al., 2017; Rasmussen et al., 2016). Contextually, this evidence should be expected, because these are young females found in strict patriarchal environment, and a complex and controlling social system, sub-Saharan Africa (Kizza et al., 2012).

In terms of the adolescent groups, the finding of the present study shows that more street-connected (than in-school) adolescents are likely to endorse the motive "I wanted to die" as a single reason for their self-harm, whereas more in-school (than street-connected) adolescents are likely to endorse motives other than death intentions (e.g., "I wanted to sleep for a while", "I wanted to know if someone really cared about me" etc.) as a single reason for their self-harm. This is interesting, as it points to a possible understanding that even though the reported prevalence estimates of self-harm are relatively lower among street-connected adolescents in this study, the relatively higher frequency of death motive for their self-harm may be indicative of elevated risk for suicide among street-connected adolescents. This observation could support the evidence in the literature that,

compared to the general population of young people, homeless and street-connected young people are at a higher risk of various negative outcomes of health, including self-harm and suicide (Hodgson et al., 2013; Kidd, Slesnick, Frederick, Karabanow & Gaetz, 2018; Taib & Ahmad, 2019; Woan et al., 2013; Williams, Giano & Merten, 2019; Wong, Clark & Marlotte, 2016).

3.4.5. Factors associated with self-harm

The multivariable models of the present study showed several factors that had statistically significant associations with self-harm in the previous 12 months: female gender, non-heterosexual orientation, school work problems, history of self-harm, conflict with parents, family member attempted suicide, friend attempted suicide, physical abuse, weekly alcohol use, living alone or with a non-relative, being in a romantic relationship, experiencing parental conflict, having difficulty making or keeping friends, and experiencing multiple (six or more) negative events during the previous 12 months.

Female gender: In terms of gender, the present study shows relatively higher prevalence estimates of self-harm among females than males across both in-school and street-connected adolescent samples. The higher prevalence of self-harm among female adolescents has been found in recent meta-analyses of the global literature (e.g., Bresin et al., 2015; Cipriano et al., 2017; Gillies et al., 2018; Taylor et al., 2018; Turecki & Brent, 2016). Findings from the global burden of diseases, injuries, and risk factors for adolescents' health have consistently shown that although suicidal deaths are almost universally higher among males, self-harm remains strongly associated with females (Kassebaum et al., 2017; Makdad et al., 2016; Patton, Darmstadt, Petroni & Sawyer, 2018). This finding also supports evidence from Ghana among in-school adolescents (Asante et al., 2017; Baiden et al., 2018; Liu et al., 2018) and street-connected young people (Asante & Meyer-Weitz, 2017) that the prevalence estimates of self-harm is higher among females.

However, the finding of the present study that female gender has a significant association with self-harm is inconsistent with recent evidence from Ghana among in-school adolescents which found no significant association between gender and self-harm (Asante et al., 2017; Baiden et al., 2018). In the said studies, the authors focused on suicide attempt, whereas the present study focused on self-harm – defined without regard to the purpose of the act. Thus, beyond other possible methodological differences, the broader definition of self-harm used in the present study might explain the female gender significant association with self-harm. Clearly, the development of standardised definition and methodology in self-harm research in Ghana is needed to enable future research to understand this

association. However, available evidence suggests that in sub-Saharan Africa and other low resource contexts, the exploitative, rigid and often discriminatory gender norms (e.g., strict family and parental control over sexual and social relationships of girls, exclusion of girls from education, sexual abuse of girls, higher chore burdens and caretaking responsibilities for girls, and exclusion of girls from decision making process) strongly constrain the opportunities and aspirations of girls, thereby making adolescent girls particularly more vulnerable to emotional and internalising problems (Magai & Koot, 2019; Magai, Malik & Koot, 2018; Petroni, Patel & Patton, 2015). This contextual reality could be a plausible explanation for why more female than male adolescents in this study reported more interpersonal reasons for their self-harm (Table 3.7.1).

Sexual minority: Perhaps, one of the novel findings of the present study is the association between non-heterosexual orientation and self-harm; there is no published evidence from Ghana on self-harm in sexual minorities. Although participants who identified as heterosexual were significantly over-represented (96.5%) in the present study, the proportion of adolescents that reported self-harm was greater among those who self-identified as non-heterosexual. Of the 74 non-heterosexual participants in the present study, 47.3% (n=35) and 44.6% (n=33) reported self-harm during their life lifetime and the previous 12 months respectively. The multivariable modelling showed that adolescents identifying as non-heterosexual are more likely to self-harm than heterosexuals. This finding is consistent with evidence from elsewhere that self-harm is more severe and common among adolescents (and adults) who identify as a sexual minority (DeCou & Lynch, 2018; Fox et al., 2018; Shearer et al., 2018; Taliaferro et al., 2018; Taylor et al., 2018; Irish et al., 2019).

The Criminal Code of Ghana, Act 29 (1960), Section 104(1b) stipulates that, “whoever has unnatural carnal knowledge of another person of not less than sixteen years of age with the consent of that other person commits a misdemeanour”. This law is generally interpreted and strongly upheld as criminalising homosexuality in Ghana (Gore, 2018). Homosexuality is culturally tabooed and religiously proscribed in Ghana (Gyekye, 2003; Kaoma, 2018; O’Mara, 2018; Sarpong, 2006) and about 96% of Ghana’s population tend to have a strong repulsion towards homosexuality – that is, homosexuality is opposed by nine out of ten people in the country (Kaoma, 2018). However, available evidence suggests that some teens and other young people in Ghana still identify as non-heterosexuals (Anarfi, 1997; Boamah, 2012; O’Mara, 2018; Sabin et al., 2018). Most recent evidence from Ghana indicates that the rigid moral script, social

stigma, and the criminality associated with non-heterosexual orientation create tension and conflict within the domestic space and schools, between parents and their adolescent children, and school staff and students who identify as sexual minority (Dery, Fiaveh & Apusigah, 2019; Kaoma, 2018; O'Mara, 2018;). The implication is that young people identifying as sexual minority face unique multiple distresses, including hostility, marginalisation, shame, and rejection by religious and educational institutions, heterosexual peers, and family. This hostile social environment potentially thwarts the young non-heterosexual person's sense of belongingness and increases their perceived burdensomeness, which in turn generally gives rise to the vulnerability of this population of young people to health challenges and risky health behaviours including self-harm (DeCou & Lynch, 2018; Fox et al., 2018; Shearer et al., 2018; Taliaferro et al., 2018; Taylor et al., 2018). Given the under-representation of adolescents identifying as non-heterosexuals in the present study, perhaps, evidence from larger samples of this population is needed in this area to expand our understanding of the aetiology of self-harm, particularly from contexts, like Ghana, where sexual minorities face extreme form of social hostilities.

School work problems: The present study shows that adolescents who face school work problems are more likely to report self-harm. In adolescence, school attendance and academic performance remain important developmental tasks (Elmore, 2009), as such, it should be expected that poor performance in this area would be associated with the likelihood of self-harm. It is noteworthy that due to the over-representation of in-school adolescents in the present study, the factor, school work problem[28], seems more peculiar to self-harm among the adolescents in school than the street-connected adolescents (the majority [87.2%] of whom were no longer attending school at the time of the study). The finding of the present study is consistent with evidence of systematic reviews, cross-sectional studies, and longitudinal studies from both high-come and low-and middle-income countries (e.g., Chau et al., 2016; Evans & Hurrell, 2016; Jablonska et al., 2012, 2014; Kosidou et al., 2014; Orozco et al., 2018; Sörberg Wallin et al., 2018). In Ghana, most families live below the poverty threshold and the belief is that it takes mainly the education of young people in families to break the poverty cycle and achieve upward social mobility (Cooke, Hague & McKay, 2016; Ghana Statistical Service,

[28] School work problem is used in the present study to mean poor academic performance, poor school work, poor school performance, school failure, low school attainment, or school work difficulties.

2014). Most young people in Ghana are aware of their family's socio-economic challenges and have thus internalised the idea that securing meaningful employment in the future is dependent on their performance while in school (Ansong et al., 2018; Ansong, Wu & Chowa, 2015; Ansong, Chowa & Sherraden, 2015). In this vein, parents and families tend to have high academic expectations of their wards and push their wards to meet those expectations; the ward also has their own academic expectations, which often turn out to be above their academic competencies – a situation which places the ward under increased pressure and burden to perform academically (Ansong, Okumu, Bowen, Walker & Eisensmith, 2017; Opoku-Asare & Siaw, 2015). This pressure to perform sometimes leads to test anxiety and consequently academic failure – an outcome that may escalate the risk of mental health problems, family conflict, and risky behaviours including self-harm in students (e.g., Almroth et al., 2019; Evans & Hurrell, 2016; Jablonska et al., 2012, 2014; Kissi, Nat & Armah, 2018; Kosidou et al., 2014; Orozco et al., 2018). While a recent review of media reports has identified poor academic performance as a contributory factor to adolescent suicide in Ghana (Quarshie et al., 2015), further studies are needed to expand the evidence on school work and adolescent self-harm in the country.

Family conflicts: The present study also shows that adolescents who experience family conflicts (i.e., conflict with parents, and parental conflict) are likely to report self-harm. This finding supports evidence of recent systematic reviews of the literature and primary studies from both high-income and low-and middle-income countries that adolescents who are experiencing parent-child conflict, hostile parental interactions, and family discord are at elevated risk of self-harm (e.g., Cassels et al., 2018; Fortune et al., 2016; Huang et al., 2017; Meissner & Bantjes, 2017; Nicolopoulos, et al., 2018; Plener et al., 2018; Victor et al., 2019; Wadman et al., 2018). Even though the exact pathway through which family conflicts operates as a risk factor for adolescent self-harm is not entirely clear in the literature (e.g., Cassels et al., 2018), the consensus is that, as the family remains the primary environment where most children and young people develop, harsh and controlling parenting styles, poor parent-adolescent attachment, continuous family dysfunction and conflicts tend to be strongly linked with lasting negative behavioural and mental health outcomes – including the onset of (repeated) self-harm – in young people (e.g., Dunn et al., 2011; Eun et al., 2018; King et al., 2018; Victor et al., 2019). Future research could explore the specifics of family conflicts associated with adolescent self-harm in Ghana. For example, extant and emerging evidence suggest that recent social changes related to adolescent romantic relationships and

sexual activities, the proliferation of social media, non-heterosexual orientation of young people, higher education of young women, and the general changes in traditional cultural values due to Westernisation could be contributing to both parental and parent-child conflicts in Ghanaian families (e.g., Adjei, 2018; Asante, Osafo & Nyamekye, 2014; Anarfi & Owusu, 2011; Bingenheimer, Roche & Blake, 2017; Gyekye, 2003; Koama, 2018; Liu et al., 2018; Nukunya, 2016; Salm & Falola, 2002).

Interpersonal difficulties and living arrangement: The present study demonstrates that adolescents experiencing difficulty making or keeping friends, or living alone/with a non-relative have an increased likelihood (of onset or repetition) of self-harm. Peer relationships are important during adolescence; studies have shown that having difficulty making or keeping friends and lacking strong social support because one lives alone increase the likelihood of self-harm in adolescents (e.g., Calati et al., 2019; Haw & Hawton, 2011; Larkin, Di Blasi & Arensman, 2014; Plener et al., 2018; Victor et al., 2019; Wadman et al., 2018).

In Ghana, adult members of the extended family serve as parent-substitutes providing support to biological parents to train and rear children: a close relative formally assumes full responsibility for a child; often the child lives with the relative until they are old enough to go back to their biological parents (Nukunya, 2016). Recent evidence suggests that some urban families allow their children to live with their (parents') friends and other non-relatives (e.g., Manful & Cudjoe, 2018). Although some parents, fostered children, and kinship carers have reported satisfaction with the practice of kinship fostering, evidence also exists to suggest that the practice creates the avenue for abuse, marginalisation, neglect and deprivation and negative health outcomes for foster children (Ariyo, Mortelmans & Wouters, 2019; Imoh, 2012; Kuyini, Alhassan, Tollerud, Weld, & Haruna, 2009; Manful, & Cudjoe, 2018). Thus, further research from Ghana (using prospective designs) is needed to assess and increase confidence that the associations between living arrangements and self-harm in adolescents are causal or not.

Exposure to self-harm of significant others: The finding by the present study that adolescents exposed to the self-harm of significant others (i.e., self-harm by a family member or a friend) are themselves at an increased likelihood of self-harm is consistent with evidence from recent longitudinal studies (Mars et al., 2019; Stanford, Jones & Hudson, 2018), systematic reviews of the global literature (e.g., Brown & Plener, 2017; De Riggi et al., 2017; Jarvi et al., 2013; Plener et al., 2018), and clinical and non-clinic based primary studies (e.g., Chan et al., 2018; Doyle et al., 2015; Goldman-Mellor et al., 2019; Knorr et al., 2019; Mbroh et al., 2018;

Thompson & Swartout, 2018; Victor & Klonsky, 2018; Zhu et al., 2018). The literature offers two main explanations for the relationship between exposure to self-harm and subsequent onset (or repetition) of self-harm: 1) selection effect hypothesis, and 2) social modelling or contagion effect hypothesis (Dishion & Tipsord, 2011; Nock & Prinstein, 2005; Prinstein et al., 2010). According to the selection effect hypothesis, adolescents who are more vulnerable to self-harm are likely to befriend or associate with other adolescents who have similar tendencies. In other words, there is greater affiliation among adolescents who self-harm (Claes et al., 2010). Among young people of "alternative" identities (e.g., Goth, Emo, Punk, etc.), imitating the self-harming behaviours of others represents a way of identifying with the rest of the group (e.g., Hughes et al., 2018; Trnka et al., 2018; Young et al., 2014).

The social contagion effect hypothesis provides that adolescents self-harm through social learning or imitation; they engage in self-harm because they had seen a significant other (e.g., a family member or a peer) self-harm. Some adolescents and other young people have reported that they were actually taught or encouraged by peers to self-harm (Nock, Prinstein & Sterba, 2009). Evidence suggests that adolescents who are exposed to the self-harm of significant others tend to adopt similar methods of self-harm (Victor & Klonsky, 2018).

However, it is noteworthy that in the present study, some adolescents reported knowledge of self-harm both by a family member and a friend, but did not report actually engaging in self-harm themselves. It is possible that these adolescents might have not experienced multiple negative interpersonal circumstances and/or unbearable thoughts, which are associated with self-harm. In other words, simply having been exposed to the self-harm of a significant other is not enough to precipitate self-harm – it may shape a response to distress, but without the distress, witnessing is not enough to warrant self-harm. It is also possible that having been exposed to the self-harm of a significant other might even be a deterrent to self-harm in the future. Although non-disclosure or social desirability effect could play a part for this evidence, perhaps, as acknowledged in a recent study by Victor and Klonsky (2018), further research is needed to clarify the interpersonal mechanisms that contribute to self-harm in young people previously exposed to the self-harm of significant others.

History of self-harm: In the present study, having a history of self-harm was the strongest correlate of adolescent self-harm; history of self-harm prior to the past 12 months was the strongest factor associated with both the onset and repetition of self-harm during the past 12 months. Although there is no previously

published evidence on this relationship from Ghana, this finding is not surprising, as it remains the most robust evidence with medium to large effect sizes for the risk factor relationship within the self-harm and suicidology literature – it is consistently evident across clinical, community, and longitudinal studies, and systematic reviews and meta-analyses of findings on adolescent self-harm globally (e.g., Andover et al., 2012; Fox et al., 2015; Goldman-Mellor et al., 2019; Hawton et al., 2012; Klonsky, May & Saffer, 2016; Moran et al., 2012; Plener et al., 2018; Ribeiro et al., 2016). In fact, some recent studies have identified young persons with a history of self-harm as representing a severe group with a disproportionate increased risk of suicide (e.g., Bostwick et al., 2016; Goldston et al., 2015; McKean et al., 2018; Rogers et al., 2018), while a cross-sectional survey of undergraduate students shows that the presence of certain protective factors did not change the strength of the relationship between history of self-harm and current self-harm (Muehlenkamp & Brausch, 2019).

More evidence from future cross-cultural and longitudinal studies in Ghana may be helpful in obtaining useful explanations for this risk factor relationship. Given the one-time cross-sectional approach used in the present study, one can only speculate that the strong association between history of self-harm and current self-harm may be pointing to an underlying sensitisation process. The sensitisation hypothesis posits that, a person would show increased sensitivity and reactivity to the circumstances or factors that trigger the urge to self-harm, with repeated exposures to those factors (Goldston et al., 2015). Potentially, sensitisation leads to the adoption of severe self-harm methods, repeated episodes of self-harm, and self-harm in response to ordinarily less amount of provocative distress (Brown et al., 2005; Goldston et al., 2015). In simple terms, it could be speculated that previous self-harm which proved ‘effective’ in responding to or coping with distressing circumstances could be repeated in the present, under certain circumstances (e.g., having access to means of self-harm).

Alcohol use: Alcohol use as a significant correlate of adolescent self-harm as evident in the present study is in line with findings of systematic reviews and meta-analyses of the global literature on alcohol consumption as a risk factor for self-harm at both the individual and population levels (e.g., Borges et al., 2017; Breet, Goldstone & Bantjes, 2018; Darvishi et al., 2015; Norstrom & Rossow, 2016) and recent clinical and community based evidence from high-income and low resource contexts (e.g., Bracken-Minor et al., 2012; Breet, Bantjes, & Lewis, 2018; Jarvi & Swenson, 2017; Monto et al., 2018; Sellers et al., 2019; Thompson & Swartout, 2018). While rigorous research effort at clarifying the mechanism

underpinning the relationship between alcohol use and self-harm is faced with many practical and ethical challenges (Conner, Bagge, Goldston & Ilgen, 2014), available evidence suggests that alcohol use prior to self-harm facilitates the transition from thoughts of self-harm to actual self-harm by numbing fears about self-harm (Bagge et al., 2015; Breet & Bantjes, 2017). Other studies have suggested that alcohol use as a coping mechanism – for example, against depression – simultaneously complicates the course of depression and impairs the judgements of the depressed person, while increasing impulsivity, thereby leading to acute negative outcomes, including self-harm (Borges & Loera, 2010; Sullivan, Fiellin & O'Connor, 2005). Granted, this can be particularly problematic among adolescents, given that adolescence is associated with increased substance and alcohol misuse, poor impulse control, and general increase in risky behaviours such as self-harm (Gore et al., 2011; Hawton et al., 2012; Kassebaum et al., 2017; Mokdad et al., 2016; Patton et al., 2007; Sawyer et al., 2018). Clearly, given that the present study revealed only an association between alcohol use and self-harm, more evidence (from Ghana) is needed to clarify the actual relationship between alcohol use and self-harm in adolescents (whether alcohol is serving as a coping mechanism for unbearable thoughts, causing or leading up to self-harm or merely having an association with self-harm, or whether self-harm rather leads to alcohol use).

Physical abuse and bullying victimisation: The finding that physical abuse is a statistically significant correlate of self-harm in the present study was expected, but the lack of statistically significant association between bullying victimisation and self-harm was unexpected. In spite of the latter, the ORs and IRRs and their respetive CIs showed clinically significant evidence of an association between bullying victimisation and self-harm (repetition) during the previous 12 months. There is a plethora of evidence from high-income countries and from sub-Saharan Africa, as shown in the systematic review (Chapter 2) supporting the strong association between bullying victimisation and self-harm among adolescents. Key evidence from Ghana shows that among adolescents, bullying victimisation is generally understood as physical abuse (Ohene et al., 2015; Owusu et al., 2011). Thus, in the present study, it is plausible that most of the participants might have expanded the meaning of physical abuse to included bullying victimisation, thereby increasing the statistical power of physical abuse while decreasing the sample size of those who reported bullying victimisation. Recent evidence from school-based studies in Ghana shows a strong association between physical abuse and bullying victimisation, and attempted suicide (Asante et al.,

2017; Baiden et al., 2018; Koyanagi et al., 2019). Whist the present study does not reveal or infer any causal relationship, some previous studies have observed that, potentially, adverse interpersonal behaviours such as physical fighting, bullying, physical beatings, and sexual abuse can contribute to internalisation of accumulated feelings of shame, depression and social isolation – which in turn could precipitate self-harm in adolescent victims (e.g., Asante et al., 2017; Page & West, 2011).

Given the fact that street living is associated with aggression and violence as a survival strategy (Heerde et al., 2014), group level multivariable analysis of the data was performed in the present study (Appendices 3.17 – 3.18). As expected, physical abuse had a statistically significant association with self-harm among in-school adolescents, but non-significant in the street-connected adolescent sample. This group level finding is consistent with the recent evidence among street-connected adolescents in Accra, that physical abuse has no statistically significant association with attempted suicide (Asante & Meye-Weitz, 2017). Whereas Asante and Meye-Weitz (2017) offer no explanation for this finding, a plausible interpretation could be made with reference to the general street living tenet of 'fighting for survival'. Over time, a street-connected young person internalises and lives by the reality of intermittently being a perpetrator and a victim of physical abuse as a survival strategy (Heerde et al., 2014). Thus, the present finding could be indicating that street-connected adolescents are more likely to interpret physical beating as a survival strategy, whilst most in-school adolescents are likely to see physical beating as an abuse, a judgement which could increase self-harm likelihood among in-school adolescents, if this precipitates unbearable thoughts.

Romantic relationship status: Another interesting finding of the present study is that being in a romantic relationship is associated with increased odds of self-harm. This finding is unexpected and expected at the same time. It is unexpected because one would have anticipated that the avenue provided by intimate social relationship for meaningful intimacy and social support would serve to 'protect' young people in romantic relationship from self-harm (Milner et al., 2015). For example, in a recent study (Joly & Connolly, 2019) exploring romantic relationship and resilience among street-connected youth in Canada, 29% of the participants reported that their partners helped them to avoid self-harm or assisted them to move away from unsafe situations; their partners supported them through difficult emotions or gave them hope and a reason to push through difficult times.

On the other hand, this finding is to be expected because as adolescents, there could be major interpersonal problems, either in the relationship itself, or how

the relationship is perceived or supported by significant others (e.g. parents, siblings or peers). In most LAMICs, premarital romantic relationships by adolescents are generally frowned upon by parents and families (e.g., Bingenheimer, Roche & Blake, 2017; Marecek & Senadheera, 2012); evidence from the systematic review (Chapter 2) shows that, in sub-Saharan Africa, often adolescent girls tend to report parental disapproval of romantic relationship as a key reason for their self-harm. Available evidence from Ghana indicates that parental disapproval of adolescent romantic relationship is a key precipitant of attempted suicide and suicide in adolescents (e.g., Quarshie et al., 2015; Sefa-Dedeh & Canetto, 1992).

Thus, besides methodological limitations, it is possible that the finding of the present study is more related to the lack of support or satisfaction or meaning in the romantic relationship, rather than the mere status of being in an intimate relationship. Recent evidence indicates that adolescents experiencing partner violence or abusive dating relationships are more likely to self-harm (e.g., Baker et al., 2015; Nahapetyan, Orpinas, Song, & Holland, 2014; Stone et al., 2017; Thompson & Swartout, 2018).

Multiple stressful life events: Another key finding of the present study is that adolescents who were experiencing multiple stressful life events were more likely to report self-harm during the past 12 months; experiencing six or more negative life events during the previous 12 months was strongly associated with increased odds and repetition of self-harm, regardless of being in-school or street-connected. This finding is consistent with evidence from an existing systematic review of the literature (Liu & Miller, 2014), and the cross-national Child and Adolescent Self-Harm in Europe study (Madge et al., 2011), that even though some stressful life events and psychological characteristics are more likely to be implicated than others, adolescents who self-harmed were more likely, than those who only had thoughts about self-harm, to have experienced multiple stressful life events (e.g., exposure to the self-harm or suicide of others, sexual or physical abuse, and having concerns about one's sexual orientation). Similarly, a key finding from longitudinal studies (Liu et al., 2014; Miller et al., 2018), an inpatient psychiatric unit study (Daniel et al., 2017) and cross-sectional studies of adolescent samples drawn from households and schools in the United States (Paul, 2018), China (Liu et al., 2017, 2018, 2019) and Sweden (Zetterqvist, Lundh, & Svedin, 2013) is that, adolescents who experience multiple stressful life events are more likely to self-harm.

Furthermore, emerging evidence suggests that among street-connected young people (and homeless people in general), experiencing more stressful life events is strongly associated with self-harm (Gauvin et al., 2019; Panadero, Martín, & Vázquez, 2018). Given that the multivariable modelling in the present study included simultaneously all potential correlates studied, it is possible that this finding could point to a support for the diathesis-stress explanatory model of self-harm set out in Chapter 1 (Section 1.2.2) of this thesis. Basically, the diathesis-stress model (Brodsky, 2016; Evans et al. 2004; Hawton et al., 2012; Mann et al., 1999) hypothesises that self-harm results from the often interactive and overlapping nature of exposure to stressful events and underlying vulnerabilities in the individual (diathesis). In the present study, for example, exposure to multiple stressful events (e.g., physical or sexual abuse, bullying victimisation, death of a close person, family conflict) during the previous 12 months, in the presence of certain vulnerabilities (e.g., female gender, non-heterosexual orientation), was strongly associated with increased likelihood of the onset and repetition of self-harm within the same 12 month period. It must be noted though, that in the present study, some stressful life events (e.g., conflict with parent, exposure to attempted suicide by a family member or a friend, physical abuse, school work problems) have stronger independent association with self-harm than others, while some are not entirely independent of others. Certainly, more research in this area, particularly, from both in-school and out-of-school adolescents in Ghana is needed.

3.4.6. Factors associated with repetition/counts of self-harm

Interestingly, however, the multivariable models of the present study showed a few factors that are not associated with the onset of self-harm but have statistically significant associations with lower repetition (incidence rate) of self-harm during the previous 12 months: having more than four siblings, experiencing serious romantic relationship problems, self or a non-relative as primary caretaker, and being aged between 18 and 21 years. Put differently, these factors were found be strongly associated with lower number of episodes or repetition of self-harm during the previous 12 months. Two of these associations are not surprising: adolescents having more than four siblings have relatively greater chances of obtaining sibling support to avoid continuous self-harm (e.g., Ferrey et al., 2016); and evidence from longitudinal studies shows the frequency of self-harm declines by late adolescence, towards early adulthood (e.g., Plener et al., 2015). However, it is unexpected that experiencing serious romantic relationship problems, and having self or a non-relative as primary caretaker would each be significantly associated with lower frequency or repetition of self-harm. Perhaps the approach used for this study is

unable to account for some unexpected effects such as these. Undoubtedly, future studies may consider exploring further evidence to clarify these associations.

3.4.7. Adolescent groups

Another key surprising finding across the multivariable analyses of the present study is that no statistically significant association between adolescent groups (i.e., in-school and street-connected) and self-harm during the previous 12 months was found. This is worthy of some comments. Given that most in-school adolescents have the benefits of family and school protection and functional health literacy, compared to street-connected adolescents, it should have been expected that being a street-connected adolescent would be significantly associated with increased odds and repetition of self-harm. Notably, however, the results of the present study did not show any such association in the multivariable analyses; there was no statistically significant association between the adolescent groups and self-harm. This lack of significant association could mean that although the living circumstances of the two groups of adolescents studied vary, the various risk factors related to self-harm are equally challenging for both in-school and street-connected adolescents in the Greater Accra region. This explanation is supported by the results of the muti-level analyses that the contexts in which the adolescents are found (i.e., school and streets) are strongly associated with self-harm. Alternatively, however, it could be argued that perhaps, this finding also needs to be treated with caution, as the sample sizes of the two groups in the present study vary substantially with street-connected adolescents representing only 18.2% of the total sample studied. Relatedly, each of the two groups of adolescents was treated as a homogenous set of young people in this study – a conflation which might have blurred some important behavioural differences related to self-harm.

3.4.8. Profile of adolescents at elevated risk of self-harm

Cluster analysis of the data showed that adolescents who are at a higher risk of self-harm are mainly in-school older female adolescents, who are experiencing multiple stressful negative events, with high percentage scores on history of self-harm, and are less likely to be independent from their social networks. This finding is consistent with evidence from previous studies creating profiles to identify adolescents at risk of self-harm (Latina & Stattin, 2018; Somer et al., 2015; Stanford & Jones, 2012; Stanford, Jones, & Hudson, 2018). An understanding of the risk profile of adolescents may help school staff (e.g., counsellors, teachers) in identifying students who are at a higher risk of self-harm, in order to support them or refer them to other support sources.

The vulnerability of older adolescent girls in this finding is not particularly surprising, as generally evidence on adolescent mental health across LAMICs has consistently identified adolescent girls as being at a higher risk of negative mental health outcomes (e.g., Brown et al., 2017; Fazel et al., 2014; Patel et al., 2008; Petroni et al., 2015; Pumariega & Sharma, 2018). More girls than boys are exposed to multiple stressful life circumstances and their effects, especially, in African, the Caribbean, and South Asian countries. For example, in Ghana, girls are often the victims of child marriage, gender-based violence, sexual and physical abuse, bullying, school dropout, teenage pregnancy, among others (UNFPA–Ghana, 2016). Even though social changes are occurring in Africa, the Caribbean, and South Asian cultures, families still have and exercise a socially sanctioned power over girls and women – this includes control over women's and girls' interpersonal relationships, guarding the virginity of unmarried (young) women, expectations of traditional standards of acceptable female comportment and protection of family honour, and the requirement that a (young) woman must remain under the guardianship of a man until she marries, when the husband takes over the responsibilities of her original male guardian for her (e.g., Bolz, 2002; Brown et al., 2017; Nukunya, 2016; Marecek, 1998). Non-conformity is seen as a threat to family status and the stability of the social system; evidence shows that punishment for non-conforming girls and women involves physical and emotional abuse, which are supported and legitimised by the culture (Bolz, 2002; Marecek & Senadheera, 2012; Nukunya, 2016; Pumariega & Sharma, 2018; Sefa-Dedeh & Canetto, 1992).

Thus, most girls and women in African, Caribbean, and South Asian cultures tend to experience a severe sense of powerlessness and lack of freedom and autonomy, mainly due to male domination and repressive family life and tensions. Studies from these contexts have interpreted self-harm and suicide among girls and women as a means of escape from or a protest against conflictual, abusive, and repressive family life and interpersonal relationships (e.g., Beekrum et al., 2011; Hicks & Bhugra, 2003; Kizza et al., 2012; Marecek, 2006; 1998; Marecek & Senadheera, 2012; Paiman & Khan, 2017; Sefa-Dedeh & Canetto, 1992; Shekhani et al., 2018; Thapaliya et al., 2018).

3.4.9. Strengths of the study

The inclusion of an out-of-school urban group of adolescents (i.e., street-connected adolescents) adds to the strength and extends the evidence contributed by this study to the literature. The literature on adolescent self-harm is replete with studies involving mainly in-school adolescents (Muehlenkamp et al., 2012; Swannell et al., 2014; Valencia-Agudo et a., 2018), with out-of-school adolescents remaining under-

researched (Cheng et al., 2014). Thus, the inclusion of street-connected adolescents in the present study adds useful heterogeneity of adolescent sample and exposure variables to the literature thereby contributing to a more balanced public health view of the problem of self-harm in adolescents. Within the global and sub-Saharan African literature on adolescent self-harm, this study represents the first attempt at simultaneously including both in-school and street-connected adolescents in an integrative and a comparative cross-sectional approach to estimate the prevalence and to describe some of the common factors associated with self-harm.

In Ghana, the present study broadens the evidence base by including a relatively larger regional sample of adolescents in second cycle schools. Existing studies from the country on adolescents in second cycle schools have focused on senior high schools only (Asante et al., 2017; Baiden et al., 2018; Liu et al., 2018; Koyanagi et al., 2019; Vancampfort et al., 2019). Similarly, the street-connected adolescents included in the present survey were drawn from the key charity facilities working with street-connected young people and across the street census enumeration zones within the Greater Accra region. The previous study focused on street-connected young people living in only Accra Central, one of the ten street census enumeration zones, with no participant recruited from charity facilities (Asante & Meyer-Weitz, 2017).

The generalisability of the findings of this survey can be viewed in two ways. First, on purely statistical basis, the findings are generalisable to only the two populations of adolescents in the Greater Accra region of Ghana from which the samples were drawn: adolescents in second cycle schools and street-connected adolescents. However, based on the shared circumstances and sharp similarities between the samples studied and the general population of in-school and street-connected young people across the country and sub-Saharan Africa (Chapter 2), the findings may be applicable to or may provide a window on the rest of the general population of these two samples of adolescents in Ghana and across sub-Saharan Africa. Specifically, most street-connected young people in the major cities of a typical country within sub-Saharan Africa originate from various parts of the country and are often faced with same life circumstances in the streets: unemployment, hunger, physical and sexual abuse, lack of stable shelter etc. (DSW et al., 2011; Embleton, Ayuku, Makori, Kamanda & Braitstein, 2018; Embleton, Lee, Gunn, Ayuku & Braitstein, 2016; StreetInvest, 2013).

Regarding in-school adolescents (using Ghana as an example), the centralised, computerised school selection and placement system used in placing

students into second cycle schools implies that second cycle schools tend to receive young people of diverse socio-economic, religious, ethnic, and geographical backgrounds within the country – although there are challenges with the computerised placement system (Ajayi, 2012). For example, a model senior high school in Accra (with a hostel or boarding facility) typically has a fair regional mix of students who hail from various parts of Ghana (GES, 2015a, 2015b; Nanewortor, 2011). Perhaps, the challenge with this second view is that there was no item on the survey questionnaire asking about the (street-connected or in-school) participants' geographical region or communities where they had come from, even though some of the interview participants (in Chapter 4) indicated that they had come from various parts of Ghana outside the Greater Accra region.

3.4.10. Limitations of the study

There are several noteworthy limitations to this survey in the light of which the findings should be interpreted and considered. First, non-disclosure of self-harm behaviours in anonymous self-report surveys has been reported among young people (De Luca, Yan, Lytle & Brownson, 2014). In Ghana, non-heterosexual orientation, illicit drug use, and self-harming behaviours are culturally proscribed and criminalised (Act 29, 1960; Act 236, 1990; Mishara & Weisstub, 2016). Available evidence shows that persons found guilty of breaking this moral and legal code have been punished by family members and stigmatised by the larger community or imprisoned or given hefty fines by the law court (Adinkrah, 2013; Osafo et al., 2015). Thus, despite being an anonymous survey, the tendency of non-disclosure might have been higher and these socio-cultural prohibitions might have led some participants to provide guarded answers and socially desirable responses to some of the questions about their lifestyles and self-harm in this survey (Althubaiti, 2016).

In-school adolescents who were absent on the day of the data collection did not get the chance to respond to the survey – a situation which might have led to an underestimation of the prevalence of self-harm among the student participants. Previous studies have shown that students who are absent from school regularly tend to experience marked adverse mental health and unhealthy behavioural outcomes (Bovet et al., 2006; Finning et al., 2019; Heyne et al., 2019; Kearney, 2008; Lereya et al., 2019). Also, among students who were absent due to ill health, some might have had psychological problems and might be at risk of self-harm (Epstein et al., 2019; Hawton, Rodham, & Evans, 2006).

The survey with the street-connected adolescents involved 9.1% participants who had no formal education at all. There is evidence to suggest that

street-connected young people (particularly, those who have no formal education background) are poor at recalling and reporting of demographic details and date-related questions in research (Aptekar & Stoeklin, 2014; Hutz & Koller, 1999). This may be partly pointing to a plausible explanation for the relatively larger sparse data bias (Appendix 3.18) and possibly the lower period prevalence estimates and repetition/counts of self-harm reported among this sample in the present study.

Another related limitation is recall error (Althubaiti, 2016; Widom, 2019). For some of the participants, there was a considerable time lag between their last episode of self-harm (e.g., at age 13) and the time of participating in the present survey (e.g., at age 19). Many of these participants might have had distorted memories of the factors leading up to their self-harm or might have modified the interpretation of their self-harm, possibly after seeking professional treatment or receiving general informal supportive responses, or simply by virtue of maturity (Plener & Fegert, 2015).

The larger data size (n = 2,107) of the present survey partly made it possible to build multivariable logistic regression models to assess the factors associated with self-harm (Agresti, 2013; van Smeden et al., 2018). However, the over-representation of the school sample (81.8%), compared to the street-connected sample (18.2%), might have substantially skewed the findings of the multivariable modelling to be more applicable to in-school adolescents than the street-connected participants. Similarly, more adolescents in public than private second cycle schools were sampled for this study – which could make the school-based results more applicable to public than private second cycle schools.

In the present survey, the correlates (exposure variables) and self-harm (outcome variable) were measured at the same time point; it is difficult to assess whether the self-harm followed the exposure to the correlates in time or whether the exposure to the correlates was influenced by the self-harm. Thus, the cross-sectional nature of this study does not permit causal interpretation of the findings regarding the factors identified to be associated with self-harm (Hemkens et al., 2018; Kazdin et al., 1997; Kraemer et al., 1997). Relatedly, the approach used in this study did not allow for the assessment of the reasons addressing why the adolescents chose self-harm, in the first episode, as an appropriate response but not another behaviour. For example, why did adolescents experiencing multiple family strife choose to self-harm instead of, for example, running away from home, or seeking help from any of the various formal support sources (e.g., the Department of Social Welfare, or the Domestic Violence and Victim Support Unit of the Ghana Police Service)? Perhaps, future studies could consider using a

qualitative approach (e.g., one-to-one interviews) to explore participants' reasons for choosing self-harm (particularly, in their first episode) over other potential behaviour options, whether legitimate or criminal; helpful or unhelpful.

Also, the measurement of self-harm in this study was done through the use of a single item on the questionnaire. This approach might have led to a lower estimation of the prevalence of self-harm (Muehlenkamp et al., 2012).

Finally, whereas the astonishingly high response rate (89.4%) in the present school-based survey is within the range of response rates reported by previous school-based studies from Ghana (97% [Baiden et al., 2018]; 82% [Koyanagi et al., 2019; Vancampfort et al., 2019]; 99% [Liu et al., 2018]), one may argue that the "captive" nature of the school context could account for this high response rate. Additionally, the Ghanaian (and the general African) mores that young people must submit to and obey their parents and respect their elders (Gyekye, 2003; Nukunya, 2016) might have created a sense of compulsion to participate on the part of the adolescents approached for the survey, even though participation was voluntary.

3.4.11. Conclusion

Self-harm is a significant public health problem among in-school and street-connected adolescents in the Greater Accra region of Ghana. The prevalence estimates of self-harm are higher among females and in-school adolescents than males and street-connected adolescents. However, the patterns of associated factors are similar between in-school and street-connected adolescent groups. This study recommends further studies to explore the individualised and contextual meanings of self-harm to inform evidence-based intervention and prevention efforts among these young populations in Ghana.

Chapter 3: Key Findings

- Consistent with evidence from high-income countries and review of evidence from sub-Saharan Africa (Chapter 2) on the prevalence estimates of self-harm in adolescents, typically, one in five adolescents reported having self-harmed in their life, and one in six reported an episode of self-harm during the previous 12 months.
- Self-harm was commoner in females and in-school adolescents, but rarer in street-connected adolescents.
- Self-cutting was the commonly reported method of self-harm, compared to self-poisoning.
- Multiple negative experiences mainly related to interpersonal relationships and circumstances were associated with self-harm in adolescents; no single factor presented as a ‘cause’ or ‘risk’ factor for self-harm in adolescents.
- Although the statistical evidence seemed to point to self-harm in adolescents as a response to distress, this explanation was limited by the structured questionnaire survey approach used.

Chapter 4

4.0. Adolescent self-harm in Ghana: Adolescents' lived experiences and stakeholders' views.

4.1. Introduction and Rationale

As revealed by the systematic review of the literature (Chapter 2), the majority of the available few qualitative studies exploring first-person accounts of the understanding of self-harm among adolescents in sub-Saharan Africa have been conducted mainly in South Africa (Beekrum et al., 2011; Meissner & Bantjes, 2017; Shilubane et al., 2012). In Ghana, the available qualitative studies have been undertaken mainly with adult participants (Akotia et al., 2019; Osafo et al., 2015). The extant clinical qualitative case study in Ghana by Sefa-Dedeh and Canetto (1992) included one adolescent female patient who reported failed sense of autonomy in her family, and family harassment and dispute as the main reasons for her self-harm. The authors interpreted the patient's self-harm as a desperate act of powerlessness, an attempt to regain control and autonomy over social relationships and resources (Sefa-Dedeh & Canetto, 1992). Thus, to the best of my knowledge, the present study represents the first effort at providing qualitative evidence from Ghana on the meanings of self-harm as held by a non-clinical sample of adolescents with a self-harm history and their adult key stakeholders.

The present study considers a qualitative research approach appropriate for addressing the outlined research questions below (Section 4.1.1.). This choice of method is also due to the complex nature of the phenomenon of self-harm, and the lack of knowledge about "self-harm" particularly in terms of the subjective experiences of young people and their key adult stakeholders in Ghana. According to Mars et al. (2014), qualitative approaches are urgently required to understand the nexus between risk factors and self-harm and suicidal behaviours in African countries. Furthermore, self-harm and suicide researchers (e.g., Hjelmeland, 2010; Hjelmeland & Knizek, 2010, 2011; Hjelmeland & Knizek, 2016; Lester, 2010; White, 2016) have underscored the use of qualitative approaches in the study of self-harm and suicide, because they yield in-depth understanding of participants' views on

issues and relevant themes. “Qualitative studies of self-harm move away from identifying and counting risk factors to emphasise the subjective experience of participants in an exploratory approach” (Wand, Peisah, Draper & Brodaty, 2018, p.290). Thus, qualitative methods allow for the study of further and deeper strands of meaning and insights, and for the exploration of problem areas that are difficult to study using structured questionnaires, as participants are allowed to provide their own narratives (not bound by the format of standardised questionnaires) related to their personal thoughts, feelings, motivations, experiences of life events and their socio-cultural context, and pathways to self-harm (Bonnewyn et al., 2014; Kjølseth, Ekeberg & Steihaug, 2009; Toomela, 2007; Wand et al., 2018; White et al., 2016).

4.1.1. Aims and Research Questions

Among other findings, the questionnaire survey of this thesis (Chapter 3) provides evidence on the prevalence estimates of adolescent self-harm and findings of statistical modelling aimed at identifying various factors that are associated with self-harm in adolescents in the Greater Accra region of Ghana. However, evidence from statistical modelling does not provide all the explanations for the reported prevalence estimates and factors associated with self-harm (Bantjes & Swartz, 2019; Franklin et al., 2017; White, Marsh, Kral & Morris, 2016). Moreover, a larger number of the participants in the questionnaire survey (Chapter 3) reported being exposed to the factors found to be associated with self-harm, but they did not report lifetime self-harm. Thus, this qualitative study sought to explore the lived experiences and first-person perspectives of adolescents reporting self-haarm for deeper reflections on the interpretive repertoires available in the Ghanaian cultural context for making sense of self-harm in adolescents. Additionally, this study sought to extend the evidence on understanding adolescent self-harm in Ghana by exploring the views of a cross-section of key adult stakeholders (i.e., parents, teachers, social workers, school counsellors, and institutional representatives of government) who have regular contact with and occupy primary positions to respond to adolescent self-harm among students in second cycle schools and street-connected young people in the Greater Accra region of Ghana.

Specific research questions: The specific research questions of this study were in two parts, based on the two main groups of participants involved: adolescents and key adult stakeholders.

Specific research questions related to adolescent participants:

1) What are the adolescents' accounts of the circumstances leading up to their self-harm?
2) How do the adolescents make sense of their self-harm?

Specific research questions related to key adult stakeholders:

3) How do adult stakeholders perceive self-harm in adolescents?
4) How do adult stakeholders respond to self-harm in adolescents?

5) Finally, the present study sought to obtain a cross-section of suggestions by the participants to the question, "how can self-harm in adolescents be prevented in Ghana?"

4.2. Method

Guided by the COnsolidated criteria for REporting Qualitative research – COREQ-32 (Tong, Sainsbury, & Craig, 2007), this section describes the research design, setting and the sampling procedures followed to approach and recruit participants for this third empirical study. Next, the materials and specific data collection strategies and analysis technique used are also described. Finally, issues related to researcher reflexivity and ethical considerations are discussed.

4.2.1. Design and Setting

A qualitative cross-sectional design (Brinkmann, 2013, Brinkmann & Kvale, 2015; Bryman, 2006) involving the use of one-to-one semi-structured interviews was used for this study. Self-harm is considered a sensitive issue and often adolescent participants (in interviews) seek a confidential context in which to share their experiences (Biddle et al., 2013; Chandler, 2018). Thus, rather than a group interview or focus group discussions, a one-to-one interview approach was deemed most appropriate for this study, as it allows for informant privacy thereby encouraging participants – particularly adolescents – to freely share their

experiences and concerns with a researcher (Heath et al., 2009; Punch & Graham, 2017).

A semi-structured interview strategy was adopted for this study as it allows for further probing and discussion of interesting and critical issues that arise during the interview, and the understudied nature of the phenomenon of adolescent self-harm in Ghana made the use of semi-structured interviews most appropriate for this study (Bernard, Wutich & Ryan, 2017; Brinkmann, 2013, 2014; Brinkmann & Kvale, 2015; McIntosh & Morse, 2015). Previous studies from sub-Saharan African have found one-to-one semi-structured interviews useful in examining self-harm in both clinical and non-clinical samples of adolescents, and the perspectives of stakeholders (e.g., Beekrum et al., 2011; Meissner & Bantjes, 2017; Shilubane et al., 2011, 2015).

The Greater Accra region of Ghana was the site for this study (see Chapter 1, Section 1.2.6.3 – 1.2.6.4 for further description of the study site). As indicated earlier, the sample of this study was made up of adolescents (i.e., in-school adolescents, and street-connected adolescents), and key adult stakeholders of adolescents. Recent growing research evidence suggests that the best source of information regarding matters related to young people are the young people themselves, as direct interviewing of young people provides a far more comprehensive account of their own life (Barreto Carvalho et al.2017; Doyle et al., 2017; McAndrew & Warne, 2014; Rasmussen et al., 2016; Scoliers et al., 2009). However, teachers, parents and other key adult stakeholders connected to the everyday world of young people can provide very important and useful information and insights into the behaviour of young people (e.g., Berger, Hasking & Reupert, 2014; Nielsen & Townsend, 2018; Oldershaw, Richards, Simic & Schmidt, 2008; Schepp & Biocca, 1991; Shilubane et al., 2015).

4.2.2. Sample and Recruitment

Sample size in qualitative research cannot be determined a priori through the use of statistical formulae (Braun, & Clarke, 2016; Malterud, Siersma & Guassora, 2016; Onwuegbuzie, & Leech, 2007; Sim, Saunders, Waterfield & Kingstone, 2018). Therefore, the sample size determination for this study began by following the pragmatic “rule of thumb” of recruiting between six and ten participants for an experiential thematic analytic interview study (Braun & Clarke, 2013). The final sample size of 47 (36 adolescents and 11 stakeholders) was determined mainly by the availability and willingness of the participants.

Adolescent Sample (n = 36): Drawing on the questionnaire survey component of this thesis (Chapter 3), the "intensity sampling" strategy – a purposeful sampling technique based on the logic of seeking "excellent or rich examples of the phenomenon of interest, but not highly unusual cases" (Patton, 2002, p. 234) – was used to conveniently and purposively select available adolescents who reported a history of self-harm in the questionnaire survey. The adolescent participants in the questionnaire survey who filled and signed the additional consent form (Appendix 3.10) expressing their interest to participate in the interview study were initially contacted via telephone and invited to participate in the interview. In all, 36 adolescents, comprising 24 in-school adolescents and 12 street-connected adolescents, were recruited and included in this study. Figures 4.1 – 4.2 provide detailed illustration of the recruitment process and reasons for excluding some of the in-school adolescents and the street-connected adolescents respectively.

In-school adolescents (n = 24): To preserve the anonymity of the participants in this study, pseudonyms were used in place of their real names. As shown in Table 4.1, the in-school adolescents were aged between 15 and 20 years (mean = 17.3; standard deviation = 1.2; modal = 17), and comprised of 18 females and six males. In terms of school residential status, all the in-school adolescents were non-residential or day students except one, Cathy, who was a resident in a boarding house. They reported as belonging to families of sibling size varying between 1 and 8 (mean = 4; standard deviation = 1.6; modal = 4). All the in-school adolescents self-identified as heterosexual, apart from three participants – Alicia (bisexual), Sara (transgender), and Chris (bisexual).

In the strictest terms of the definition of self-harm adopted for this thesis "acts that are 'interrupted' before self-harm is inflicted" are excluded. However, two in-school adolescent participants who reported 'interrupted self-harm' were recruited for the interview study because of the relatively high lethality of the methods of 'attempted' self-harm they reported (i.e., hanging and stabbing) and the aim of the interview to explore the lived experiences of adolescents regarding the circumstances leading up to their (decision to) self-harm – see Figure 4.1.

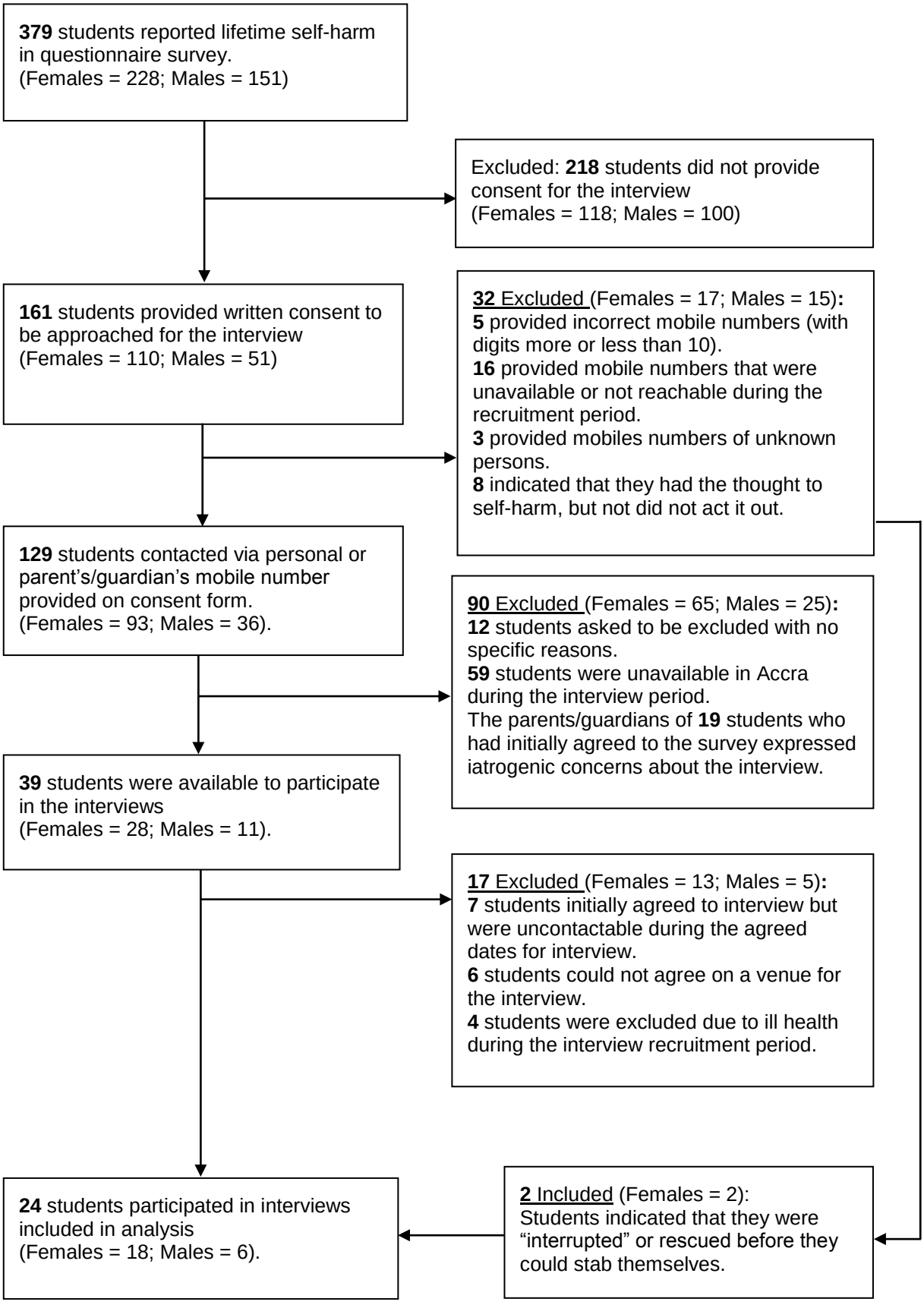

Figure 4.1: Participant recruitment process for qualitative interviews with in-school adolescents

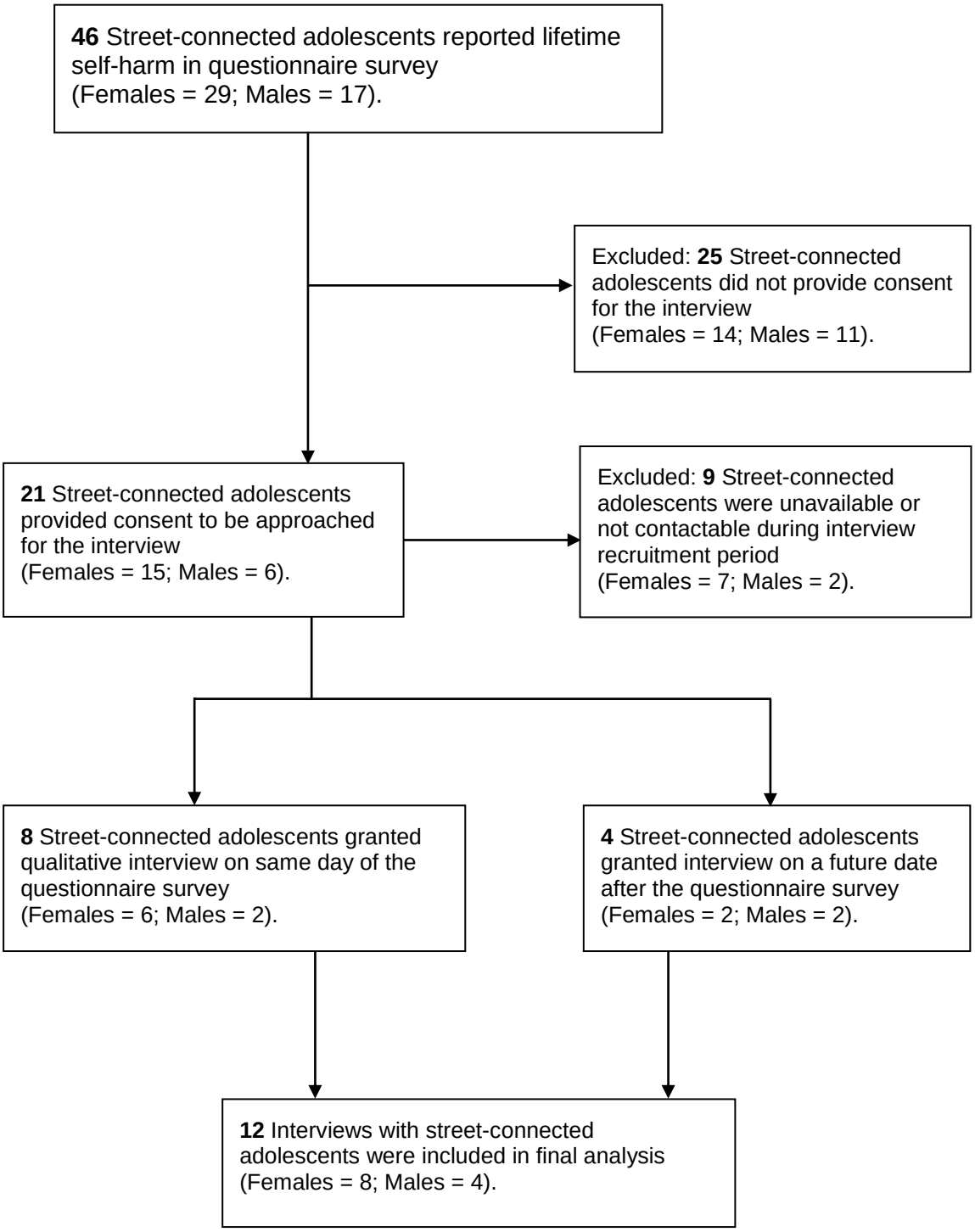

Figure 4.2: Participant recruitment process for qualitative interviews with street-connected adolescents.

Three students self-identified as Muslim (Aisha, Akeem, and Amina), whilst 21 indicated that they were Christians. Besides schooling, two in-school adolescents indicated that they were employed (Steve [employed], and Claire [self-employed]), whereas the remaining in-school adolescent participants indicated that they were only students and did no paid job. The in-school adolescents in this study reported lifetime self-harm frequency ranging between 1 and 7 (mean = 2.2; standard deviation = 1.8). Also, 54.2% (n=13) indicated that prior to their own self-harm, they knew someone (directly or indirectly) who had self-harmed or died by suicide in their family, community, school, or among their friends. Similarly, 87.5% (n=21) reported that they had seen self-harm scenes in television content prior to their own self-harm. One female student (Nadia, 18 years) reported that she was a mother of one child because she was raped at age 16; she lived with her siblings and parents who took care of them.

Street-connected adolescent (n = 12): The 12 street-connected adolescents comprised eight females and four males; they were aged between 13 and 19 years (mean = 15.9; standard deviation = 1.6; modal = 16). They reported that they had been in the street situation between one and three years (Mean = 1.8; standard deviation = 0.9; modal = 1). Table 4.2 provides the socio-demographic characteristics of the street-connected adolescents who participated in this study. Two participants each indicated that they had a bisexual orientation (Zenabu and Ato), were unemployed (Latifa and Lewis), and were still attending school (Barikisu and Efia) at the time of the study. They reported that their families of origin had sibling size varying between 1 and 8 (mean = 4.6; standard deviation = 2.7; modal = 1); their fathers had more than one wife, except one (Ato) whose father had one wife, and Lois who indicated that she never knew her father. The street-connected adolescents reported lifetime self-harm frequency varying between 1 and 2 (mean = 1.4; standard deviation = 0.5; modal = 1). Nine (75%) indicated that prior to their own self-harm, they knew someone (directly or indirectly) who had self-harmed or died by suicide in their family, community, school, or among their friends. Four (33.3%) mentioned that prior to their first episode of self-harm, they had seen self-harm content on television. One female participant (Maud, 19 years) reported that she lived on the street with her daughter; she indicated that she was a single-parent because her male partner denied responsibility for her pregnancy.

Table 4.1. Socio-demographic Characteristics of Adolescents in School

Characteristic Name	Gender	Age	Family structure. Father has	Current living arrangement	Sib size	In romantic relationship	Knew of self-harm or suicide*	Age at first self-harm episode	Self-harm method at first episode	Age at last self-harm episode before interview	Self-harm method at last episode before interview	Lifetime frequency of self-harm
Nadia	Female	18	1 wife	With both parents	3	Yes	No	16	Cutting	–	–	1
Anna	Female	18	1 wife	With mother	4	No	Yes	14	Overdose	–	–	1
Aisha	Female	17	1 wife	Grandparents	6	Yes	No	16	Rescued before stabbing.	17	Hitting	2
Laura	Female	18	> 1 wife	With mother	2	Yes	No	16	Poisoning (rodenticide)	–	–	1
Lisa	Female	19	1 wife	With grandmother	4	Yes	Yes	18	Cutting	–	–	1
Amina	Female	18	Father deceased	Step father	4	Yes	Yes	15	Overdose	17	Cutting	6
Mina	Female	17	Father deceased	With mother	3	Yes	No	13	Rescued before stabbing.	–	–	1
Sheila	Female	16	1 wife	With both parents	5	No	Yes	14	Burning	16	Burning	7
Phyllis	Female	18	> 1 wife	With both parents	3	No	Yes	10	Cutting	17	Cutting	6
Cathy	Female	15	Separated	With father	4	No	Yes	15	Cutting	–	–	1
Julia	Female	17	1 wife	With mother	4	No	Yes	16	Stepped into traffic	16	Hitting	1
Abbie	Female	16	1 wife	With mother	2	Yes	Yes	16	Cutting	–	–	1
Joan	Female	17	1 wife	With both parents	6	Yes	Yes	16	Cutting	16	Cutting	3
Jade	Female	16	> 1 wife	With mother	4	Yes	No	14	Alcoholic drink	16	Alcoholic drink	2
Topaz	Female	17	> 1 wife	With Aunt	8	No	No	13	Overdose	16	Overdose	4
Claire	Female	17	1 wife	With mother	4	No	No	16	Burning & hanging	–	–	1
Alicia	Female	17	1 wife	With both parents	5	Yes	No	14	Alcoholic drink	17	Cutting	4
Sara	Female	19	1 wife	With both parents	6	No	No	17	Jumping	18	Alcoholic drink	2
Bob	Male	15	1 wife	With both parents	3	Yes	Yes	13	Overdose	–	–	1
Akeem	Male	17	1 wife	With mother	1	No	Yes	17	Alcoholic drink	–	–	1
Steve	Male	18	Divorced	With mother	6	Yes	Yes	16	Hanging	–	–	2
Chris	Male	18	Divorced	With mother	3	No	No	15	Cutting	18	Cutting	2
Eliot	Male	17	Mother deceased	Grandfather	4	Yes	Yes	14	Drowning & cutting	–	–	1
Morris	Male	20	Divorced	With father	3	Yes	No	16	Alcoholic drink & cutting	–	–	1

Note:
* This item relates to whether or not, prior to the participant's own self-harm, they knew someone (directly or indirectly) who had self-harmed or died by suicide in their family, community, school, or among their friends.

Table 4.2. Socio-demographic Characteristics of Street-connected Adolescents

Characteristic Name	Gender	Age	Still have contact with family	Current living arrangement	Sib size	Street life age (in years)	Religious group	In romantic relationship at time of interview	Educational background	Still attend school	Knew of self-harm or suicide*	Age at first self-harm episode	Self-harm method at first episode	Age at last self-harm episode before interview	Self-harm method at last episode before interview	Lifetime frequency of self-harm
Becky	Female	17	Yes	With mother	7	1	Christian	No	JHS 3	No	Yes	16	Cutting.	–	–	1
Lois	Female	16	Yes	Lives alone	3	3	Christian	No	Primary 6	No	Yes	15	Poisoning (rat poison).	–	–	1
Maud	Female	19	Yes	Lives alone	8	2	Christian	Yes	Primary 4	No	Yes	15	Cutting.	–	–	1
Barikisu	Female	17	Yes	With sister	1	1	Muslim	Yes	Primary 3	Yes	Yes	11	Jumped in front of a moving motorbike.	–	–	1
Efia	Female	16	Yes	With sister	6	2	Christian	No	JHS 2	No	Yes	16	Overdose.	16	Alcoholic drink.	2
Latifia	Female	15	Yes	Lives alone	1	1	Muslim	Yes	Primary 4	Yes	No	12	Alcoholic drink mixed with marijuana.	14	Stepped into traffic.	2
Mimi	Female	16	No	Lives alone	8	3	Muslim	Yes	Primary 4	No	Yes	15	Poisoning (weed killer).	–	–	1
Zenabu	Female	17	Yes	With mother	6	1	Muslim	No	JHS 1	No	No	15	Suffocating.	16	Overdose.	2
Edem	Male	14	Yes	With mother	1	1	Christian	No	Primary 3	No	No	14	Hitting head to wall.	–	–	1
Lewis	Male	15	No	With mother	3	1	Christian	No	Primary 6	No	Yes	12	Hanging.	13	Rescued after stepping into traffic.	2
Ato	Male	13	No	With mother	4	3	Christian	No	Primary 2	No	Yes	13	Overdose.	13	Poisoning (Illicit drug).	2
Abdul	Male	16	No	Lives alone	7	2	Muslim	Yes	Primary 5	No	Yes	14	Drowning.	14	–	1

Note:

* This item relates to whether or not, prior to the participant's own self-harm, they knew someone (directly or indirectly) who had self-harmed or died by suicide in their family, community, school, or among their friends.

JHS = Junior High School

Key adult stakeholder sample (n = 11): I used convenient and purposive sampling techniques (Coyne, 1997; Patton, 2002; Ritchie, Lewis, Nicholls & Ormston, 2013) to identify and recruit some key adult stakeholders to participate in this study. I approached some of the school staff (i.e., heads of school, teachers, and school counsellors) in the schools where the questionnaire survey was conducted and invited them to participate in this interview study. Similarly, I approached and invited some of the staff (i.e., head of charity facility, and street social workers) at the charity facilities where the questionnaire survey was conducted with some of the street-connected adolescent participants. Also, I approached the two government representatives in their respective offices to discuss the purpose of the study and invited them to participate in the interview. At the initial contact with each of the potential participating adult stakeholders, I gave out the participant information sheet (Appendix 4.1) providing details on the purpose of the study, roles and rights of participants, and ethical approval of the study, plus an additional form (Appendix 4.2) requesting the potential participants to provide their contact details to enable me to reach and invite them to participate in the interview at a future date. Figure 4.3 illustrates the recruitment process and reasons for exclusion of participants for the interview with the key adult stakeholders. In all, I approached and invited 26 potential participants, but 11 key adult stakeholders participated in this study: one head of a school, two teachers, a school counsellor, two parents, one head of a charity facility, two street social workers, and two government representatives (one each from the Ghana Education Service and the Department of Social Welfare).

Furthermore, to help contextualise and interpret the views shared by the key adult stakeholders in this study, a brief 11-item anonymous questionnaire was designed to obtain socio-demographic information from each adult stakeholder (Appendix 4.3). Items on the questionnaire included gender, age, marital status, number of children, and position/rank at place of work. As shown in Table 4.3, the 11 key adult stakeholders comprised five females and six males, aged between 30 and 55 years (mean = 44.6; standard deviation = 8.7). All of the key adult stakeholders self-identified as Christian and employed. Each of them had a tertiary educational background, with number of years in current position at work ranging between one and 23 years (mean = 10.6; standard deviation = 7.8).

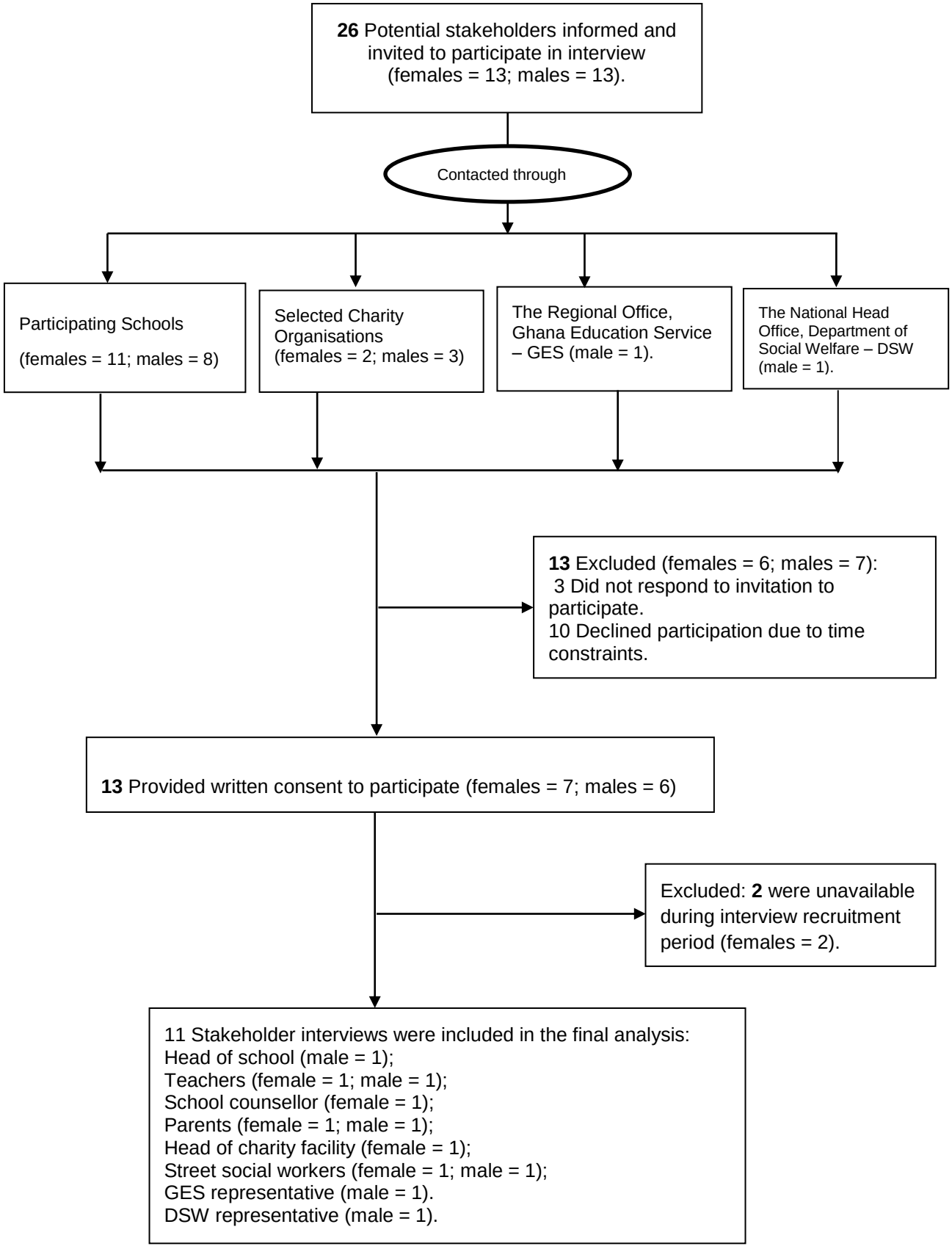

Figure 4.3: Participants recruitment process for key adult stakeholder interview

Table 4.3. Socio-demographic characteristics of key stakeholders

Code	Characteristic							
	Gender	Age	Status	Marital status	№ of children	№ of children aged 10-25	Educational Qualification	Years in current position at work
M1	Male	30	Street social worker	Single	0	0	1st Degree	3
F1	Female	34	Street social worker	Single	0	0	Diploma	4
F2	Female	43	Head of charity facility	Married	3	2	Diploma	19
M2	Male	55	GES representative	Separated	2	2	PhD	1
M3	Male	50	Parent	Widowed	5	5	1st Degree	23
F3	Female	42	School counsellor	Separated	3	2	1st Degree	6
M4	Male	43	Teacher	Married	1	0	1st Degree	9
F4	Female	36	Teacher	Single	3	1	1st Degree	17
M5	Male	55	Head of school	Married	3	3	1st Degree	10
F5	Female	48	Parent	Married	3	3	Master’s Degree	20
M6	Male	54	DSW representative	Married	2	2	Master’s Degree	5

Note: GES = Ghana Education Service. DSW = Department of Social Welfare

4.2.3. Materials

Based on the evidence obtained from the systematic review of the literature from sub-Saharan Africa (Chapter 2), and the questionnaire survey (Chapter 3), and the aims of this study, I developed a semi-structured interview protocol to guide this study (Appendices 4.4 – 4.7). The interview protocol was made up of two parts. The first part was a narrative part where each participant was asked to provide a description of their experience of self-harm or general view about the phenomenon. Specifically, the adolescent participants were asked, “Please tell me more about your self-harm”; the stakeholders were asked, “what’s your general opinion about self-harm in adolescents in Ghana?”

The second part of the interview protocol, the problem-focused part, involved questions probing relevant details that were not sufficiently addressed in the responses to the narrative questions. In the questionnaire survey of this thesis, a single item was used to assess self-harm, a situation which could lead to a misclassification of the behaviour. Thus, multiple probing questions were deemed important as they helped to reduce this limitation of misclassification in this interview study with the adolescents (Giddens & Sheehan, 2014; Millner, Lee & Nock, 2015; O'reilly, Kiyimba & Karim, 2016). The development of the problem-focused part was guided by the antecedent-behaviour-consequence framework for reviewing and assessing self-harm behaviours in adolescents (Peterson, Freedenthal & Coles, 2010). Within this framework, interview questions are composed based on the Antecedents (i.e., precursors, triggers, stressors or situations leading to self-harming act. Example, “what do you remember happened that led you to think about or actually harming yourself?”); Behaviour characteristics (i.e., intensity, frequency, methods/means used, and duration of the self-harm. Example, “what did you use to harm yourself?”); and Consequences (i.e., emotional relief, help-seeking, care and attention from others etc.) relating to the act of self-harm, for example, “What did you feel after harming yourself?” (Appendix 4.4).

Some of the problem-focused questions asked in the interview with the adult stakeholders were related to exploring the cultural representations and meanings, and the resources available at the family, school/community level and government policies for the management and prevention of adolescent self-harm in Ghana. Among other questions, the adult stakeholders were asked, “What are some of the factors that make adolescents self-harm?”, “What do you suggest can be done to help adolescents who self-harm? “In your opinion, how can self-harm in adolescents be prevented?” (Appendices 4.5 – 4.7).

An audio tape recorder was used to capture all the interviews to facilitate transcription and analysis. I made field notes during and immediately after each interview to provide context for the transcripts (Phillippi & Lauderdale, 2018).

4.2.4. Data Collection

The data collection for this study took place between August 2017 and April 2018. I conducted all the one-to-one interviews with the available sampled participants. Figure 4.4 provides a summary of the sequence in which the interviews were conducted. The sequence of the interviews was mixed so as to allow for the validation and testing out of issues and suggestions arising between the adolescent participants and the key adult stakeholders.

4.2.4.1. Interview with Adolescents

Young people's responses in a research interview can be influenced by the location where the interview takes place (Heath, 2009; Punch & Graham, 2017; Scott, 2008). Also, owing to the sensitive and highly stigmatised nature of self-harming and suicidal behaviours in Ghana (e.g., Osafo, 2016; Osafo et al., 2015, 2017), each selected participant was allowed to choose a neutral venue for the interview that was less threatening for them and as such made them feel at ease. Thus, participants were guided by the criteria of proximity, convenience, privacy and safety in choosing an interview venue. Of the 24 in-school adolescents, two were interviewed in the participant's home; five were interviewed in empty classrooms in the participant's school; three opted to be interviewed via telephone; and 14 were interviewed in a university research office. Four of the street-connected adolescents opted to be interviewed in offices at charity facilities, whereas eight participants chose to be interviewed at various street locations (e.g., quiet corners of restaurants, empty market sheds, quiet passenger waiting shed at transport terminals etc.).

Prior to the beginning of each interview, the participant was taken through the participant information sheet again in order to remind the participant of their roles and rights. In terms of duration, the interviews with the in-school adolescents lasted longer (between 60 and 90 minutes) than the interviews with the street-connected adolescents (between 23 minutes and 35 minutes). I observed that the relatively shorter duration of the interviews with the street-connected adolescents was mainly due to fatigue, as many of the participants developed bloodshot eyes of tiredness, while others showed reduced concentration mostly after the first 20 or 25 minutes of the interview.

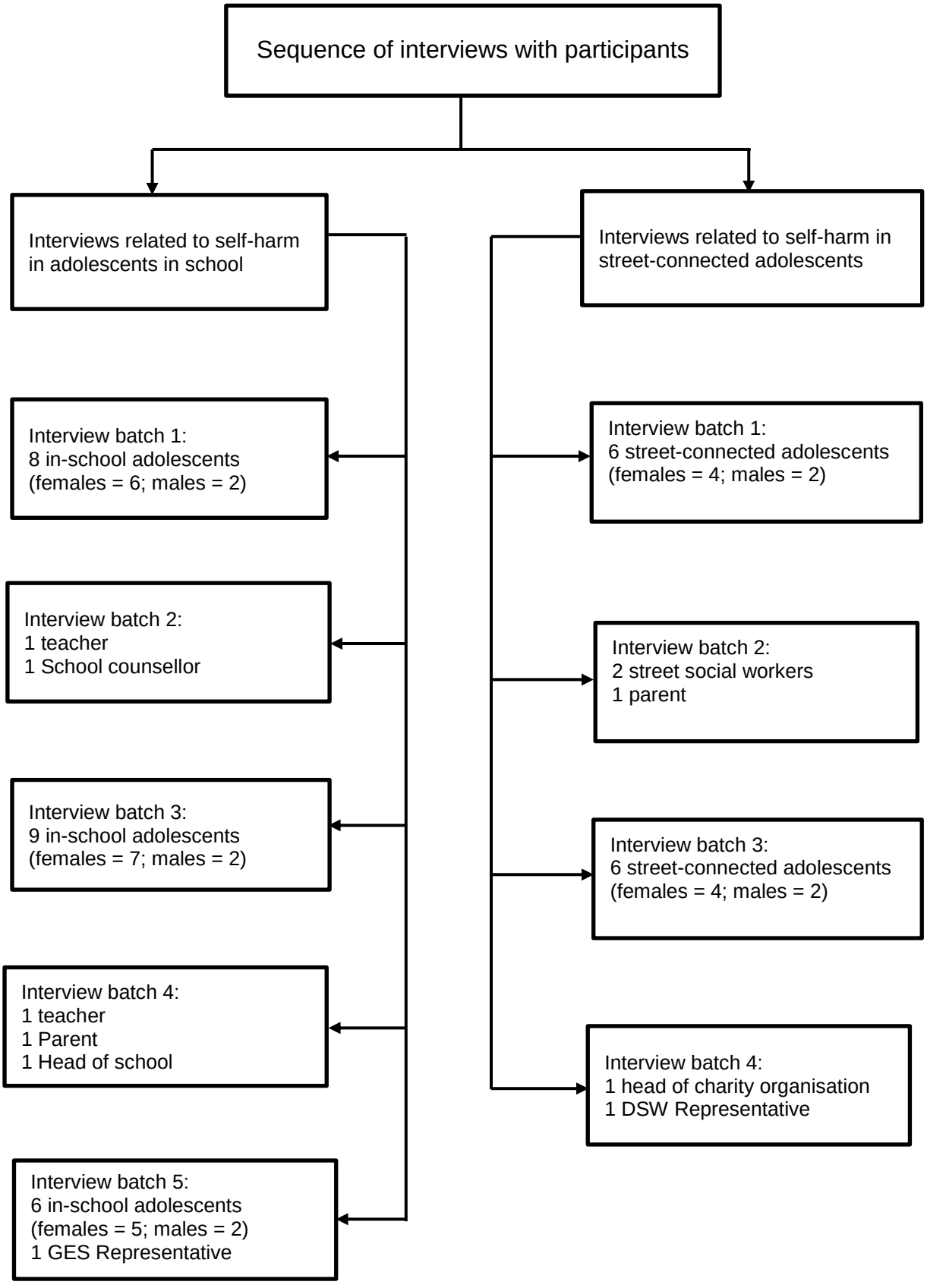

Figure 4.4. Mixed sequence of interviews with participants.

One street-connected adolescent actually dozed off after 32 minutes into the interview. Upon realising this practical challenge after the first couple of street-connected interviews, I re-ordered the interview questions to ensure that key questions and probes requiring responses to address the main research questions related to the adolescent participants were asked earlier, preferably within the first fifteen minutes of the interview. I believe this strategy helped to reduce the 'loss' of information due to participant fatigue among the street-connected adolescents. No one else was present during any of the interviews with the adolescents. No follow-up or repeat interview was conducted.

4.2.4.2. Interview with key adult stakeholders

Participants who filled the participant invitation form (Appendix 4.2) were each contacted via telephone to agree on a venue and a future date and time for the interview. On the day of the interview, I took the participant through the participant information sheet (Appendix 4.1) to remind them of their roles and rights, after which I invited them to sign an actual informed consent form (Appendix 4.8) to among other things indicate their permission for the interview to be recorded. Seven opted for the interview to be conducted in their office at their workplace and two participants (school staff) were interviewed in the empty library of their school. One parent chose to be interviewed in the study of her home. The interview with the adult stakeholders lasted between 63 minutes and 105 minutes. No follow-up or repeat interview was conducted with any of the key adult stakeholders. No one else was present during the interviews with the stakeholders, except one parent who opted for her daughter (Phyllis, 18 years) to sit in the interview, even though the daughter did not contribute to the interview. Five days prior to this interview, I had interviewed the daughter in an empty classroom at her school on her experience of self-harm. Presumably, the mother might not be aware of this, as the daughter did not need the mother to consent for her participation. Notably, all the interviews, with both adolescent and adult participants, were conducted during the daytime, between 7a.m. and 3 p.m.

4.2.4.3. Language

The choice of language is critical in generating meaningful data in qualitative research (Polkinghorne, 2005). Participants' understanding of terms and concepts used in framing researcher questions have been found to, sometimes, deviate significantly from the researcher's intended meanings (Berman & Silverman, 2017). Such wrong conceptions of terminologies inadvertently inform participants' responses to interview or survey questions which in turn brings the validity and

reliability of the findings and conclusions of the study into question. Specifically, in this study the meaning of “self-harm” was iteratively emphasised in the language understood by the participants with illustrative examples in order to ensure that the participants’ understanding of the term (as applied in this study) was devoid of the notion of unintentional injury or harm resulting from accidents, but not limited to only self-injurious or self-poisoning behaviours with suicidal motives (i.e., attempted suicide). This decision was partly informed by two contextual facts: 1) so far in Ghana, the available studies on self-harming behaviour among in-school adolescents (Asante et al., 2017; Liu, Huang & Liu, 2018) and street-connected children and youth (Asante & Meyer-Weitz, 2017) have used the terms “suicidal attempt”, “suicide attempt”, or “attempted suicide” to mean self-harm; 2) more importantly, teen and student suicide represented the zeitgeist of the first three quarters of the year 2017 in Ghana; student suicide was topical and dominated media reports and discussions (e.g., Adu & Awuah Jnr., 2017; Daily Graphic, 2017; Dailyguide Africa, 2017; Frimpong, 2017). For example, within a period of two weeks in the month of March 2017, 10 cases of suicide were reported in the media of which four were adolescents (Kubi, 2017). Therefore, in the context of the present study, repeatedly emphasising the meaning of the term self-harm as applied was partly aimed at preventing the participants from restricting the meaning of the term to attempted suicide or suicide-intended self-harm as used in the previous studies or misconstruing the term to mean suicide as used in the prevailing media reports and discussions at the time.

The language for each interview in this study was based upon the participant’s choice of convenient language. Generally, the interviews were held in English, Ga, and the Twi language. Eight in-school adolescents opted to have the interview entirely in English; 11 student participants opted to mix English and Ga or Twi; two student participants were interviewed in Twi, whereas three student participants chose to be interviewed in the Ga language. Among the street-connected adolescents, three were interviewed in the Ga language, while nine opted for the Twi language, but mixed with English. The interviews with the adult key stakeholders were held in English.

4.2.5. Data Analysis

Generally, I began the data analysis while conducting the interviews, by reflecting on and keeping field notes of potential patterns in the data based on the experiences and views being shared by the participants. However, I devoted full attention to analysing the data during the transcription of the recorded data and the thematic analysis stage.

4.2.5.1. Transcription of interviews

Apart from providing an excellent avenue for getting familiar with the data, the process of transcribing verbal data in qualitative research has been found to be a key stage of data analysis; it represents an interpretative act which enables the researcher to begin creating meanings from the data (Bird, 2005; Braun & Clarke, 2006; De Sousa, Magalhães, De Oliveira & Albuquerque, 2019; Lapadat & Lindsay, 1999). In the light of these benefits, I transcribed all the recorded interviews verbatim in English with attention to relevant features (e.g., paraverbal expressions such as um, ah, mm) which may influence the interpretation of the content (Bailey, 2008; Braun & Clarke, 2013; Halcomb & Davidson, 2006). Following the transcription, I corrected omission errors, typos, and misprints in the transcripts by concurrently listening to the recorded interviews.

The transcripts of the interviews conducted entirely in Ga or the Twi language and in the mixed language of English with Ga or Twi were reviewed by a panel of two experts in Ghana: a qualitative researcher with interest in adolescent mental health issues and a linguistics researcher. The purpose of this expert review and audit was to ensure the accuracy and precision of the translation of the local language used by the participants as contained in the English language transcript I had produced. The review was thus done by cross-checking the English language transcripts I had produced against the exact local or mixed languages used by the participants in the interview. I met with the reviewers in a university research office where we simultaneously listened to each recorded interview and read the printed version of the relevant English language transcript I had produced. Generally, consensus reached by the experts during the review sessions helped in fine-tuning and producing precise and meaningful translations of the language and terms, including figurative expressions used by the participants. Where a statement or term did not readily translate into English, it was maintained in its original form alongside a literal English translation (e.g., “kojo besia”[29]). The final versions of all the transcripts were not returned to the participants for comments or corrections due to the time limitation within which to complete and submit this thesis for examination.

[29] This Twi phrase is presented and explained later in the results section of this chapter (Section 4.3.1.1.1.5.).

4.2.5.2. Thematic analysis of data

Thematic analysis (Braun & Clarke, 2006, 2013) was used to analyse the transcribed interviews. This analytic approach was deemed appropriate for this study due to its robust nature: it is flexible with both the realist or essentialist approach (which reports experiences, meanings and the reality of participants) and the constructionist orientation – which assesses the various ways in which events, realities, meanings and other experiences are the results of a range of discourses at work within society (Boyatsis, 1998; Braun & Clarke, 2006, 2012, 2013, 2014; Braun, Clarke, Hayfield & Terry, 2019; Clarke & Braun, 2017; Tuckett, 2005). Specifically, the experiential approach to thematic analysis was applied to the data. Experiential thematic analysis "focuses on the participants' standpoint – how they experience and make sense of the world" (Braun & Clarke, 2013, p.175). Previous studies on suicide and life-threatening behaviour in Ghana – mainly among adult participants – have found thematic analysis useful in exploring how participants make sense of their personal and social environments and the meanings their experiences of life-threatening behaviours hold for them(e.g., Knizek, Akotia & Hjelmeland, 2011; Osafo et al., 2015).

Guided by Braun & Clarke's (2006, p. 96) 16 checklist of criteria for good thematic analysis (Appendix 4.9), the analysis in the present study generally followed the 6-phase approach to qualitative analysis (Braun & Clarke, 2006, p.87): familiarising yourself with your data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Table 4.4 details the 6-phase approach followed and the description of the specific analysis activity performed at each phase. Given that this study is a student research towards the award of a PhD, multiple coders were not involved in the analysis of the data. However, to reduce the potential of researcher bias, I initially shared four (relatively comprehensive) transcripts with the supervisors of this thesis for their independent reading and familiarity with the experiences and views shared by the adolescent and adult stakeholder participants in the study. I independently coded these four transcripts, developed a tentative coding frame and listed potential themes. At two supervisory meetings, I had open coding sessions with my supervisors where we intermittently re-read the transcripts to verify and agree on the description of the tentative themes and refined them as candidate themes.

Table 4.4. Phases of thematic analysis*****

№	Phase	Description of activity
1	Familiarizing yourself with your data	I transcribed all the interviews orthographically in English. I repeatedly read each transcript for familiarisation and to achieve a sense of immersion. I made notes of my initial semantic impressions in the light of the research questions guiding the study and the broader question of what was going on in the data. I discussed the initial explicit notes of the patterns across the data with my supervisors.
2	Generating initial codes	I read the transcripts closely and reflectively going beyond the explicit semantic meanings to focusing on the possible implicit or latent meanings of the views and experiences shared by the participants. I made a list of as many potential codes as possible, noting accounts and views of the participants that were consistent and contradictory.
3	Searching for themes	I sorted and collated similar codes into potential themes and sub-themes Unrelated codes were organised as miscellaneous. I extracted and collated narratives or excerpts of the data that provided compelling support for each theme and sub-theme. I used NVivo 12 to create initial thematic maps.
4	Reviewing themes	The initial themes were checked against the excerpts of narratives from the data to ensure that the themes were coherent and clear. The initial thematic maps were revised in NVivo 12 to visualise how the candidate themes were meaningfully connected and fitted together to represent the data in a compelling manner.
5	Defining and naming themes	I checked the themes (and their sub-themes) against the dataset, the research questions and extracts, and organised the themes to provide a coherent and consistent account of the data. Where necessary, I re-named some of the themes more concisely and clearly, meaningfully capturing the related data addressing the relevant research question.
6	Producing the report	The reporting of this study was guided by the recommendations of the consolidated criteria for reporting qualitative research – COREQ-32 (Tong, Sainsbury & Craig, 2007).

***** In the present study, although the analysis generally followed the 6-phase discrete approach (Braun & Clark, 2006), the process was more iterative.

Following these two open coding sessions with my supervisory team, I independently coded the remaining transcripts. In doing this, I adopted the initially refined coding frame and candidate themes as a prototype to guide the analysis of the remaining transcripts. The index of candidate themes ensured consistency of the descriptions and labels. New themes emerging from the remaining transcripts were reviewed and added to the index of themes or discarded in some instances. This strategy I adopted for the analysis served as an alternative method of researcher triangulation to achieve a broader understanding of the phenomenon of interest to the study (Tong, Sainsbury & Craig, 2007). The NVivo software (version 12) was used to manage the data.

4.2.6. Reflexivity

In qualitative research, the researcher represents a critical instrument in the evidence production process (Berger, 2015; Creswell, 2014; Mann, 2016). In this vein, the values, experiences and (professional) viewpoints of the researcher influence the analysis and interpretations of the data (Braun & Clarke, 2013; Braun et al., 2019). “Reflexivity in a research context refers to the process of critically reflecting on the knowledge we produce, and our role in producing that knowledge” (Braun & Clarke, 2013, p. 37). Being self-reflexive thus encourages the qualitative researcher to be transparent and sincere about how their subjective biases, values, inclinations, shortcomings and strengths influenced and were influenced by the research process, thereby helping to illuminate the reader’s understanding of the subject matter of the qualitative enquiry (Denzin & Lincoln, 2018; Krizek, 2003; Tracy, 2010). In the following sub-sections, I acknowledge and discuss my experience of interacting with the participants, particularly, the adolescent informants and my previous research work experience in the area of life-threatening behaviour. I identify how these experiences facilitated and at some points hindered the research process. Finally, I discuss the epistemological stance guiding the study, and my positionality relative to the reliability of the participants’ accounts.

4.2.6.1. Researcher-participant relationship

During the participant recruitment period when I contacted potential participants through telephone calls inviting them to participate in this interview study, some of the in-school adolescents misconstrued the invitation as an invitation for therapy (instead of a research interview). This misconstrued position was particularly shown by the potential participants who had self-harmed recently or were experiencing a self-harm crisis at the time of this research. For example, in response to my telephone invitation to participate in the study, four of the potential in-school

adolescent participants said things similar to the following, “I’m fine now, I spoke with my pastor and he prayed with me”, or, “I don’t think I need the interview again, I am OK now”. To correct this misconception, I explained to them that my invitation was for them to take part in a research interview where they would share with me in confidence their personal experience and history of self-harm but not for me to provide them with therapy. After this and further clarification, three of them agreed to participate. The fourth person could not agree with me on a suitable time and venue for the interview, even though she agreed to participate.

A few of the in-school adolescents experiencing self-harming crisis at the time of the qualitative interviews misrepresented the research interview situation as a therapeutic context. They misconceived me, the researcher, as a “therapist” and themselves as “patients” thereby creating a “therapist-patient” situation. This situation further led some of these informants to view the researcher as a “first-time-caregiver”, thereby expectant of therapy or healing from the “researcher-informant” relationship. To reduce this situation, I constantly and regularly reminded the informants of my basic role as a researcher in the setting rather than as a therapist. Although, I sought to develop and maintain close ties with my informants in order to understand their life-worlds and foster empathy (Bahn & Weatherill, 2013; Denzin & Lincoln, 2018; Leake, 2019) I strived to maintain a good degree of professional distance as a researcher (Brinkmann & Kvale, 2015). Additionally, as indicated earlier in the ethical consideration for this thesis (Chapter 1, Section 1.2.8.1.2.3 – 1.2.8.1.6), I also informed the informants of an arrangement for and availability of professional psychologists (two counsellors and two clinical psychologists) if they wanted to see one for help. In all, three participants (all in-school adolescents: two females and one male, aged between 18 and 19 years) who had self-harmed within the same week the data collection was taking place reported having strong memories of their self-harm. The two female students opted to see the psychologists for help; the male student did not agree to be referred to the psychologists for help, as he indicated that his flashback was minimal and non-intrusive. However, I gave him the contact information of the psychologists and other helplines, to call in case his flashback warranted the need for any professional help.

4.2.6.2. Researcher background

I am a Ghanaian, male in my thirties, and a parent of three young children. I was born and raised in Accra, the capital of the Greater Accra region (the geographical setting of this study). I come from a polygamous family; I am the sixth male child of my mother and eleventh child of my parents. I had my basic school, high school and undergraduate education in Accra. My master's degree thesis involved interviewing in-school and street-connected young people and shopkeepers in Accra on public attitudes towards the phenomenon of streetism in Accra (Quarshie, 2011). Prior to enrolling on the PhD at the University of Leeds, I volunteered for three years as a trainee-researcher with a suicide and violence prevention research centre based in Ghana. As part of my roles at the centre, I conducted fieldwork (i.e., I interviewed and surveyed a cross-section of participants including, students, traditional leaders, teachers, lawyers, judges, police officers, family heads etc.), transcribed recorded verbal data, conducted literature search and reviews, participated in group open coding of qualitative data sessions, and drafted manuscripts for publications in academic journals. Conducting fieldwork at the centre gave me the most remarkable privilege of experiencing first-hand various perspectives and attitudes that a cross-section of Ghanaians have towards life-threatening behaviours. Naturally, these experiences made me develop the interest and motivation to research the area for a PhD.

However, even though I had some experience interviewing and surveying research participants in Ghana on their attitudes and experiences related to life-threatening behaviours (see sample publications: Asante et al., 2017; Osafo et al., 2015, 2017, 2018; 2019; Quarshie et al., 2015, 2018, 2019), I had no experience of specifically interviewing adolescents (one-to-one or in groups) on self-harm. Thus, in the present study, although the one-to-one interviews with the adolescent participants on their self-harm experiences were informative and provided me with first-hand experience of interacting with adolescents with history of self-harm, the fieldwork also led me to experience significant levels of emotional exhaustion, particularly at the beginning of the interview phase of the research where a few of the female adolescents shared their experiences of intra-familial sexual abuse. Thus, some of the interviews were emotionally demanding, as I had to maintain a balanced emotional response pattern throughout each session of the interview. Consequently, I had to meet with a senior clinical psychologist, who is also a suicidologist based in Ghana, for sessions of debriefing and emotional support.

My experiences related to growing up in Accra and in a large polygamous family made it easy for me to readily identify with the experiences shared by most of

the adolescent participants. My adolescent experience of family poverty, physical punishment, feelings of neglect, powerlessness, and early “adultification” are immediate examples. Thus, my previous suicide-related research experience, my experience of growing up in the same or similar context of adolescence, and as an “insider” of the Ghanaian socio-cultural context positioned me better in establishing rapport and enhanced my capacity for empathy and consequently facilitated my appreciation and interpretation of the data. However, I acknowledge that my childhood and adolescent experiences and as an insider of the Ghanaian context might have also made me overlook some equally important context relevant events or influenced the analysis and interpretation of the data (Berger, 2015; Dwyer & Buckle, 2009; Ross, 2017). However, critical comments on drafts of this report by my supervisors (who are “outsiders” to the Ghanaian culture) alerted me to address some issues I had taken for granted during the analysis, due to my familiarity with the Ghanaian context. For example, there were suggestions by my supervisors that I had to reflect on the things that matter daily to the typical Ghanaian urban adolescent, in order for me to fully appreciate some of the concerns they had raised in their accounts for this study. As a point of illustration, my supervisors cited that in the UK, typically, adolescent girls are concerned with how they look/what they wear, their social media status, and validation by friends.

4.2.6.3. Researcher epistemological standpoint

In this study, I adopted the social constructionist epistemological orientation. The social constructionist perspective “is concerned with identifying the various ways of constructing social reality that are available in a culture, to explore the conditions of their use and to trace their implications for human experience and social practice” (Willig, 2013, p. 49). In this perspective, people seek understanding of their life-world by developing subjective meanings of their experiences, which are often socially and historically negotiated (Creswell & Poth, 2017). Thus, the subjective meanings are created through interaction with others and through the historical and cultural norms that are present in the lives of individuals; the subjective meanings are not simply imposed on individuals (Creswell & Poth, 2017). Drawing on this perspective, in the analysis and interpretation of the data in this study, I held the position that the views and attitudes shared by the participants represented the product of the dynamic relations and interactions between the participants and their social world (the Ghanaian social context). Thus, I paid close attention to the cultural contexts of the participants in the process of interpreting their experiences and attitudes related to self-harm in adolescents within the Ghanaian context.

4.2.6.4. Researcher positionality relative to the reliability of participants' accounts

Having a constructionist epistemological orientation to this study implies that, the main unit of analysis is composed of the experiences and views shared by the participants in this study. However, research has suggested that misrepresentation of events, non-disclosure, lying, and other impression management strategies are often evident in first-person accounts in qualitative studies (Gardner, 2001; Smetana et al., 2019; van der Geest, 2018) on self-harm (Bantjes & Swartz, 2019). Hence, it is imperative to acknowledge that the truth and reliability of the accounts (particularly, the first-person narratives shared by the adolescent) participants in the present study cannot be totally guaranteed. Anthropological studies on health-related issues in Ghana have suggested that young people lie in their narratives in order to protect personal and family privacy (Bleek, 1987; van der Geest, 2018). Among street-connected children and young people, evidence suggests that they tend to create "images which will be profitable to them because their livelihoods depend on it. Lying about their ages, family backgrounds, reasons for being on the street, and their current circumstances is part of their well-rehearsed scripts" (Aptekar & Stoeklin, 2014, p. 136). The position of the present study is that, while the first-person narratives of the (street-connected) adolescents cannot be taken as entirely true, their narratives and reflections should be considered as meaningful and critical to understanding and interpreting their life world (Aptekar & Stoeklin, 2014, Hecht, 1998; Hutz & Koller, 1999; van der Geest, 2018). For example, in the survey of this thesis (Chapter 3), owing to the compensation in the form of snack voucher for participation, 3.4% of the street-connected adolescents approached for the survey who fell outside the 13-25 age band lied about their ages so as to be recruited, and 1.3% of those available to participate in the survey attempted multiple participation (see Figure 3.4). While both actions are unacceptable to the research, they demonstrate how the motivation to survive pervades the lives of street-connected children and young people. Therefore, although the (adolescent) participants in this interview study may make up portions of their narratives and not be honest and entirely truthful about some important aspects of their accounts, their accounts can still be valid to understanding key domains of their life world. However, where credibility is stretched because the veracity of a participant's account or motive is doubtful, the reasons for my doubts would be acknowledged.

Also, based on my interests, background and experience of working with both in-school and out-of-school young people in Ghana, it is possible that in some instances of the analysis I might have made inferences from the accounts of the

participants in the absence of evidence in their accounts, but I acknowledge this and indicate that this was done with caution about the context. Finally, my overarching position and motivation for this PhD thesis is that I am an advocate of young people, particularly, in underserved contexts; my wish is to make things better and help improve their living circumstances. This means that I may not be entirely neutral and objective in my inferences and interpretations; however, throughout this research, I, with the support of my supervisory team, have made reflexivity a central part of the process (Berger, 2015; Mann, 2016).

4.2.7. Ethical considerations

This study received ethical approval from two Institutional Review Boards (the School of Psychology Ethics Committee, University of Leeds, UK, [Ref. №: 16-0373] and the Ethics Committee for the Humanities, University of Ghana, Accra, Ghana [Ref. №: ECH078/16-17]) and institutional permissions were also obtained to conduct this study (Appendices 1.1–1.4 show letters of approvals and permissions). The participants signed an actual consent from prior to taking part in the interview (Appendix 3.7). The consent of the parents/guardians of in-school adolescents aged 13–17 years was sought (Appendices 3.8–3.9), while the underage adolescents assented to participate. Consent to participate in the study was sought from the management of charity facilities and street social workers on behalf of street-connected adolescents aged 13–17 years. In presenting this report, I have pseudo-anonymised or completely anonymised all potentially identifying information including specific names of schools and charity facilities where participants were approached. Also, I have used pseudonyms in place of the real names of participants. Similarly, I have anonymised identifying features and descriptions in quotations included in this report. Chapter 1 (Section 1.2.8.1) of this thesis provides a detailed discussion of the general ethical considerations made to guide this research, covering the protection of participants, the researcher, the data collection process and the data accessed.

4.3. Results

In keeping with the recommendations by qualitative methodologists (e.g., Burnard et al., 2008; Gill et al., 2008; Wu et al., 2016) and key standards for reporting qualitative research (e.g., Levitt et al., 2018; Tong et al., 2007), the presentation of the results of this qualitative study is interspersed with contextual reflections and critical interpretations of the experiences and views shared by the participants, with meaningful linkages to the relevant literature. Thus, the "Results" section of this report shares some degree of overlap with the "Discussion" section.

The findings were organised in three parts, based on the groups of participants; key themes from interviews with: 1) in-school adolescents; 2) street-connected adolescents; and 3) adult stakeholders. A fourth overarching theme, "Adolescent self-harm prevention in Ghana", was also created to capture the views and suggestions of the participants with regard to how self-harm in adolescents can be prevented in Ghana.

4.3.1. Key themes from interviews with in-school adolescents

The participants' accounts addressing the research questions guiding the interviews with the in-school adolescents were organised around two major themes: "adolescents' attributions of self-harm" and "adolescents' meaning-making of self-harm".

4.3.1.1. Major theme 1: Adolescents' attributions of self-harm

This major theme covers the in-school adolescents' first-person accounts of the circumstances proximally preceding their self-harm (the factors to which the adolescents linked their self-harm). All the in-school adolescent participants reported that they self-harmed at home, except Phyllis (female, 18 years) who indicated that all episodes of her self-harm occurred at school. Generally, the participants described more multiple adverse factors within their families, than within peer relationships, school environment, and their community contexts, that were distally or proximally linked to their self-harm. This major theme is discussed in the light of two themes generated from the participants' accounts: adults' authority and control versus children's powerlessness, and diabolical control.

4.3.1.1.1. Adults' authority and control versus children's powerlessness

Typically, young people are at the base of the power structure within the Ghanaian family; parents and adults occupy the top of the power hierarchy, wielding more power and control, with the prerogative to reward acceptable and punish

unacceptable behaviours of children (Assimeng, 2007; Glozah, 2015; Nukunya, 2016; Nyarko, 2014). This theme, thus, captures how the adolescents linked their lower rank on the power hierarchy (lack of control) within the family to their self-harm. Their reflections covered six subthemes: “powerlessness related to age and gender”, “perceived unfair application of the rule of punishment”, “perceived family mistrust and betrayal”, “early adultification”, “parental criticism”, and “parental modelling and parent-child incongruent expectations”.

4.3.1.1.1.1. “The child is always wrong”: Powerlessness related to age and gender

In the African conceptual scheme, young people are generally considered as inexperienced in life, requiring constant adult supervision and guidance (Gyekye, 2003). Thus, the socio-cultural lore within the Ghanaian family remains that, the child is always wrong (Assimeng, 2007; Nukunya, 2016). Many of the adolescents in the present study reflected on this lore as a background (distal) factor linked to their self-harm. Some of the adolescents made statements and shared experiences similar to the following:

> At home, whatever he [my father] says or does is final […] He [my father] hit me several times and so I moved away from him and I picked my phone, while crying, and I called my mom to come home because I was being beaten by my dad. Then he got up, snatched the phone from me and hit me harder. Then he said, ‘how can you a child call your mother to report your father for beating you?’ I didn’t know what do next, I couldn’t take the pain anymore, so I went inside the bedroom and I just wanted to die (Alicia, female, 17 years).

Alicia is the third-born and only-female-child among five siblings. In this quote, her father might have interpreted Alicia’s act of “reporting” him to her mother as an affront to his patriarchal authority, given that socio-culturally even the mother was under his authority. For such display of disrespect for paternal authority by a female child, physical punishment of the child is sanctioned by the Ghanaian culture (Nukunya, 2003, 2016). Besides the unpleasant experience of the physical punishment, Alicia’s lack of control and inability to change the punishing circumstances due to her young age seemed to have been a factor linked to her self-harm.

Some of the participants reflected specifically on the lore, “the child is always wrong”, as unhelpful and inhibitory to adolescent help-seeking behaviour, which increased their distress and likelihood of choosing to self-harm. One participant, for example, reported that,

> Anywhere she [the teacher] saw me within the school she did something to embarrass me. Then one time, at morning assembly, she said that as for me she would make my life very miserable in the school. Fortunately for me

> it was the last week to vacation. I came home for the vacation, but I couldn't say anything to my mom because she is that kind of parent, who, like, she believes that the adult is always right. So, she wouldn't want to listen to my side of the story, [um…] So, I just kept it to myself (Nadia, female, 18 years).

Later in her interview, Nadia described how keeping this situation to herself affected her school work and consequently became linked to her self-harm tendencies. Drawing on his personal experiences, a male participant drew the following judgement:

> There are times when an older person can be totally wrong, and the child can be right. It is good for an older person to admit his or her mistake in front of the child […] or apologise to the child. The mentality that an older person is always right but the child is wrong is very bad. Whenever my mom behaves that way, it hurts me, I feel as if I am a bad boy, and that's what made me cut myself in the first place, because you feel as if there is nothing good you can do (Chris, male, 18 years).

Chris' view corroborated the preceding suggestion that, the moral code that "the child is always wrong whilst the adult is always right" tends to engender a sense of powerlessness and an internalised sense of self-dislike in young people. Additionally, it is plausible, drawing from Chris' experience, that where families apply this maxim, their young people are likely to display a narrow and an unhealthy dichotomous moral thinking pattern: a child cannot be right, whereas an adult is always right.

For female adolescents, the sense of powerlessness is related to both their young age and gender. For instance, Sheila (female, 16 years) said:

> I'm the first girl in the house, so I'm supposed to cook. I cook, I wash [hand-wash clothes] and I sweep… Occasionally, he [my father] drags us [the children] into his fight and 'charade' with my mother in the house. He hits and slaps me because I question him [about] why he doesn't talk to anyone in the house and I do it in front of him openly. He says I'm a girl and I can't question his behaviour. He says it's because my mother is not training me properly. But how come that my brothers, [um…] even my younger brother can ask you questions but I cannot ask you [my father] questions because I am a girl? I can't ask you to change your bad behaviour? Like, I mean, it's weird.

Sheila reported that her family was experiencing dysfunctional parental communication; her parents were not on good talking terms. Also, her father was particularly not talking to her and her siblings most of the time. In the quotation, Sheila was frustrated because she wondered why she was not supposed to ask her father questions. Her conduct of questioning her father's behaviour was inconsistent with the roles expected of her as a female and a child.

4.3.1.1.1.2. "I wonder why… they don't find anything wrong with that": Perceived unfair application of the rule of punishment

The socialisation of children and young people in the Ghanaian family is characterised by cultural sanctions: acceptable behaviours are rewarded whereas deviation from norms of socially acceptable behaviour is punished (Imoh, 2013; Nyarko, 2014). For some of the participants in this study, the decision to self-harm was also informed by their perception that the rules governing punishment of deviant behaviours were unfairly or inconsistently applied. The participants' perceived unfair application of the rules of punishment by their parents made some of the participants have the feelings that they were unloved and uncared for by their parents, negative emotions which were possibly linked to their self-harm. Abbie, for example, reported that:

> […] sometimes I wonder why this guy Joe is always the problem, because he is not the only guy I talk to or who talks to me, there is another guy, Malik, who is even much closer to me. Malik comes around and would actually sit by me… and… chat with me sometimes until the time we close [from work at 3:00am…], yet, they [my family] don't find anything wrong with that (Abbie, female, 16 years).

Abbie had been hospitalised for self-harm following physical punishment by her parents and older brother, based on reports that she had been found to be interacting with Joe (a young man in their neighbourhood), which suggested that she was romantically involved with Joe. She maintained that the reports were unsubstantiated and false. According to Abbie, however, she had not been punished at all for interacting with Malik (another young man in the neighbourhood), who was even closer and spent more time with her than Joe. In her view the same "offence" has been punished in one instance but remains unpunished in another instance. In Abbie's account, the false accusations and the physical beatings were proximally linked to her self-harm, whereas the inconsistent rule of punishment appears distally linked to the behaviour. The seemingly unfair and inconsistent application of the rule of punishment made her feel unloved and uncared for by her family.

In another interview, a participant reported that:

> […] I lost my phone, and I used to [um…] worry her [my mother] so much 'cos I was always on her phone for my chats and calls, and she would just get pissed, so, so pissed. Sometimes, I needed to use her phone to do, like, my assignments, checking and reading things online. Other times, she would give it [her phone] to my brother to play games, but she wouldn't complain. I watched her. So, I just felt bad, it was unfair, 'cos I felt like I was worrying her, and I felt like nobody understood me, like, [um…] it felt like she didn't really care about me. So, yeah, that was what caused it (Bob, male, 15 years).

Bob acknowledged that he extensively depended on his mother's smartphone to complete, what he perceived as, a justifiable cause – "chats and calls", and academic exercises and other school related activities – and as such expected his mother's approval. However, his mother complained and was unhappy with him. Bob's younger brother used the same smartphone to have fun (play games), an activity Bob perceived not to be worthwhile, and yet his mother did not show any sign of being averse to his younger brother's activity with the smartphone. Bob interpreted his mother's lack of visible disapproval of his brother's use of her smartphone as an unfair application of the rule of punishment.

4.3.1.1.1.3. "I expect my mother to defend me": Perceived family mistrust and betrayal

Predominantly, more female participants reported that they felt mistrusted and betrayed by their families, particularly, their primary caregivers, and they linked this to their decision to self-harm. The cases of perceived family mistrust and betrayal were particularly related to instances where the female adolescents maintained their innocence of accusations and rumours related to engaging in premarital romantic activities or sexual relationships.

> I was living with my aunt [my mother's sister] […] Her place is a compound house, but after school you won't see me outside; I was always indoors […] So, like, it pained me, because I always told her everything, like, everything about me. If something was worrying me I told her, I even had chats with her more than my own mother […] She called my daddy, she called my mother and told them everything. I felt really, really, bad, and angry because it was all lies […] So I took the pills […] (Topaz, female, 17 years).

Similarly, another female participant stated thus:

> I expect my mother to defend me because she knows me well, whether I go out or not, she knows it all because I live in the same house with her and we share the same bedroom. I always blame her […] I felt better dead, the pain was too much […] like, you have not done something, and you are accused of doing it, it's painful. They see me like a bad girl, but I'm not […] it beats my imagination why my mother cannot defend me, because I'm the only person who helps her (Abbie, female, 16 years).

Topaz, Abbie and some other (female) participants in this study felt betrayed, coupled with a sense of shame and anger because they perceived that their primary caregivers did not trust them regarding their innocence of any romantic involvement. Perhaps, the self-harm of these adolescent girls could be communicative in nature: they self-harmed to assert or prove their innocence of the accusations made against them. Generally, in Ghana, parents or primary caregivers of young people frown upon premarital romantic relationships and sexual behaviours, especially, by their female adolescents. Besides moral reasons, this parental disapproval is mainly fuelled by the fear of premarital/teenage pregnancy

(which is often associated with significant disruption of girl-child education, and shame and social stigma for both the female adolescent and her family), and the motivation to prevent girls from being sexually exploited; the larger society often blames premarital/teenage pregnancy on irresponsible parenting (Asare et al., 2019; Baku et al., 2018; Bingenheimer & Reed, 2014; Bingenheimer et al., 2017; Kugbey et al., 2018). Thus, in the quotes above, while Topaz and Abbie might interpret their primary caregivers' actions as punishing, mistrust and betrayal, perhaps their primary caregivers might interpret their actions as preventive measures against potential premarital/teenage pregnancy and its associated undesirable effects on the young girls, their primary caregivers and the family at large.

4.3.1.1.1.4. "I'm only a small boy, why should I be struggling as if I am a father?" Early adultification

Adultification (also referred to as "parentification" in the literature) happens when a child or an adolescent is forced to assume adult roles of acting as a primary caregiver providing emotional, material or instrumental support to adult relatives, younger siblings or themselves, before they are emotionally prepared to do so (Burton, 2007; Hooper, L'Abate, Sweeney, Gianesini, & Jankowski, 2014; Jurkovic, 1997; Schmitz, & Tyler, 2016). Among other negative effects, adultification is associated with a sense of neglect, as the child's own needs are often not (adequately) met (Hooper et al., 2014; Jurkovic, 1997). In the present study, comparatively, more male participants reported that they were "adultified" at younger ages and they linked their self-harm to the motivation to end the struggles that came with their adultification. The sub-theme "early adultification" was predominantly reported by male participants as a distal factor linked to their self-harm. In most of the instances, the participants came from broken families where they had witnessed parental separation, their parents were divorced, one parent was deceased or had ill health, or the adolescent and their siblings were being looked after by a single parent or a grandparent. These circumstances forced the participants to take on adult roles as primary caregivers by working to provide for their personal material needs (e.g., food, school fees, etc.) and those of their siblings and the financial needs of other adult relatives such as parents or grandparents.

> […] my mother became very ill, she was always in bed, and she could not work anymore. So, I had to be working to feed myself, pay my school fees, and to give her something to also take care of herself […] I was in a private school, but I stopped because of the school fees, I couldn't pay, so I moved to a government school […] I did any work at all, I was weeding people's

> houses, working as a *trotro mate*[30], carrying concrete at construction sites, and many more […] Yeah, it was very difficult, sometimes because of just food to eat for the day, I had to go and work, work, work before I could get money to buy food to eat […] I was suffering and struggling at that young age, while my friends were not doing anything like that. I was suffering too much (Steve, male, 18 years).

Steve was the last born among six children and he lived with his mother who was bedridden due to a chronic medical condition. Steve was 12 years old when his parents divorced, and his father moved out with Steve's five siblings. Steve's mother was homebound when he was 14 years old; she could not work due to her ill health. This situation forced Steve to take on the adult role of working to earn money to take care of his material needs and to support his mother. By age 16 Steve had become engrossed in doing menial jobs to the detriment of his education and social relationships; he could not keep up with the challenges of being a student and a primary caregiver at the same time.

Another male adolescent participant Eliot reported that,

> We are four children. I'm the second born and only-boy among my siblings […] I had to leave school for a week or two every month to go and work in order to get some money, for my sisters and grandfather and to keep part for myself and for school […] I went fishing […] It affected my performance at school, it went down totally, and I wasn't happy […] I'm only a small boy, why should I be struggling as if I am a father? (Eliot, male, 17 years).

Eliot's mother died when he was 10 years old and his grandfather took custody of him and his siblings. A year later, Eliot's father remarried and relocated to the city; Eliot and his siblings lost contact with their father and he did not visit them either. Between ages 13 and 14, while still a basic school pupil, Eliot played the role of a parent by working to provide for the financial needs of his siblings and himself, and to support their grandfather. Like Steve, Eliot was unable to keep up with the challenges associated with simultaneously being a pupil and a primary caretaker.

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[30] In Ghana, trotros are privately owned minibuses that travel fixed routes departing to their destinations when filled, and they can be boarded anywhere along the route. A trotro is typically operated by two people: a driver and a conductor (also called 'trotro mate' or 'mate'). Usually, the driver employs the mate (who is typically a school drop-out, an unemployed youth, or a street-connected young person) and pays him after the day's work. Although recently females are gradually working as trotro mates, usually, a trotro mate is a young man in his teens, 20s, or early 30s. While the driver drives the bus, the mate's main duties include collecting fares from passengers on board; yelling out the window the destination of the bus in order to attract passengers to fill the bus; hitting the roof or side of the bus to notify the driver when to stop or depart from a bus stop; and assisting the aged to get on board or alight.

Both participants linked their self-harm to the emotional difficulties that came with their early adultification.

4.3.1.1.1.5. "…she [my mother] called me 'kojo besia'": Parental criticism

Some of the adolescents described situations in their families where their parents criticised them for behaving in ways that were inconsistent with traditional age and gender role ideologies and expectations. Some of the adolescents reported feelings of frustration, humiliation and anger because their conduct was continuously criticised – an emotional experience they proximally linked to their self-harm.

> […] My mom said, um, like, 'that's the kind of friends you keep, that's why you also don't greet when you see people around'. She insulted me and kept talking and talking in front of everybody in the house. The next day, she raised the same issue again; the insults were too much and hurting. After that, I just went to the room, then I saw a pack of tablets on the centre table. I didn't know who placed it there, [um] I just plucked out everything and swallowed them (Anna, female, 18 years).

Anna had gone out when her female friend visited, but her friend did not greet the adults (including Anna's mother) sitting in the compound of the house. This conduct by her friend was unconventional and a breach of the etiquette of a good child behaviour. The etiquette is that a person (regardless of their age or status) who enters another person's house should first greet the person they meet in the house before disclosing their mission. Failure to greet is deemed to be disrespectful and offensive to the person in the house (Sarpong, 2006). Therefore, upon her return home, Anna was repeatedly criticised and scolded by her mother for keeping bad company.

There is a widely held maxim that guides social relationships in Ghana, which literally translates, "show me your friend, and I will show you your character"[31]. It is believed in Ghana that any two friends tend to behave similarly, and they reflect each other's way of life. The unconventional conduct of Anna's friend in the above excerpt might have been interpreted by Anna's mother as a reflection of Anna's conduct too. Thus, the repetition of the criticism by Anna's mother could possibly reflect the importance Ghanaian mothers generally place on ensuring that their girl child is always guided and protected from (actual or

[31] This maxim is synonymous to the proverb, "birds of a feather flock together".

perceived) ‘bad’ influence, in order that they would grow up taking after their mother’s ‘good’ character (e.g., Baku et al., 2018).

A loudly missing element in Anna’s description was any attempt by her to respond to or contest her mother’s criticism or even apologise for her friend’s misconduct. In fact, Anna reflected that, “I couldn’t say anything, because I didn’t want to disrespect her [my mother]. She is my mother, you know?” This response was interesting, as it seemed consistent with the Ghanaian norm of obedience and respect, which forbids children and young people from openly or privately contesting their parents’ or elders’ conduct or position on an issue (Glozah, 2015; Gyekye, 2003; Imoh, 2013). An infraction of this norm shows disrespect, which is often physically punished (Imoh, 2013). This is discussed later as a one of the key subthemes of the circumstances proximally preceding the self-harm by some of the adolescent participants (see discussion of “Enactment of tabooed emotions and contestations” below).

Furthermore, according to some participants, their family circumstances made them perform roles that were contrary to the traditional norms of their gender, yet they were still criticised continuously by their parents or significant other adult family members. One male participant, Chris, shared his experience as follows:

> For several times and days, she [my mother] called me ‘kojo besia’. My eyes were teary, and I was angry ‘cos I was feeling bad, but I tried to control myself. She [my mother] was, like, ‘anytime you are going to wash [hand-wash clothes], you will be delaying. Instead of you to wash quickly you will be taking hours’. [um…] but that’s not true, I don’t waste time washing. At first, I used to wash only my clothes and I finished within a few minutes, but these days I wash her clothes, her husband’s [my stepfather’s] and those of my younger stepbrothers combined, plus mine too. I’m a boy, she [my mother] is supposed to wash, not me. But I wash, and you call me kojo besia. [um…] I’m not a girl and I’m not lazy (Chris, male, 18 years).

Chris lived with his mother and two younger stepbrothers. Consistent with the traditional gender role ideology, the male-only younger children meant that their mother had to do most of the chores. Chris, the oldest male child, did the family’s laundry [by hand], but reported that his mother continuously labelled him “kojo besia”. In Ghana, kojo besia literally means a boy born on a Monday (Kojo) who is a girl (besia). Kojo besia is used metaphorically to mean a male who behaves in ways that are deemed stereotypical of females. Chris might have found the descriptive, Kojo besia, not only pejorative but also as a label which sought to place him outside the traditional male gender role ideology and the masculinity ideals of hard work, strength, and other behaviours that are considered stereotypically masculine.

4.3.1.1.1.6. "… We are in the 21st century…who does that?": Parental modelling and parent-child incongruent expectations

This sub-theme relates to the conflicting role expectations between parents and their adolescent children. Some of the adolescents reflected that their parents had modelled certain strict traditional parental roles from their own parents (i.e., adolescents' grandparents), which they (the adolescents) found to be incongruent with contemporary parent-child relationship expectations. Particularly, the adolescents identified their parents' traditional roles related to controlling adolescent social relationships, corporal punishment of adolescents, parental supervision and monitoring of adolescents, and everyday family interactions to be incongruent with contemporary culture. Some of the participants shared their experiences regarding their parents' traditional roles related to controlling adolescent social relationships like the following:

> And you know it really hurts 'cos my mom sometimes insults me and says all sorts of things when I'm sitting outside with my friends. So, these days when I'm with my friends and they see my mom coming they just leave, they go away because my mom will start her thing and embarrass everybody […] she is making it very difficult for me to keep my friends […] She says when she was at my age her mother didn't allow her to make friends and that helped her and kept her out of trouble. But the thing is that, I'm different, her [my mother's] friends are not my friends and her time was then, not now […] (Laura, female, 18 years).

Some participants also talked about their parents' traditional roles related to corporal punishment of adolescents similar to the following:

> [shakes head in repulsion] … it's just too bad. My dad would flog you at the least thing you do wrong. Sometimes, it was my mom who came to our aid to stop him. It was too much […] Then he would say that when they were children their parents lashed them and so they didn't do bad things. I got so annoyed anytime he said that, because your time is not the same as these modern times. Now parents talk with their children, they don't flog them. These days if you flog your child they would rather spoil and do bad stuff (Sara, female, 19 years).

Other participants also discussed their parents' traditional roles related to parental supervision and monitoring of adolescents, which they (participants) found to be continuously embarrassing. For example, a participant said:

> My mom would walk all the way to my friend's house to take me home. At first, I took it normal, but she kept on doing that […] My friends started teasing me. Once it's 4 O'clock pm and I'm in my friend's house then she would appear. I told her I don't like that, at least she could send my cousin to call me or she could call me on my phone, but uh-uh she didn't even listen to me. Whenever I complained then she would say that when she was young her mother knew everywhere she went. But, come on, we are in the 21st century, whose mother goes to pick him at his friend's house? Like, seriously, who does that? (Akeem, male, 17 years).

In the view of some participants, the traditional social roles their parents played in the everyday interactions within their families were rather compatible with previous times but not consistent with contemporary social changes in everyday family life.

> [Um…] I don't know how to say it, but my dad never changes. Sometimes, they [my parents] would fight and my mom would go and stay with my grandma for some time and then she would come back […] My father pays our [school] fees and everything, but he is so strict, he hardly smiles or laughs with us [his children], he is always ready to shout and hit someone […] But we are not in the olden days again […] I watch movies and see how families live in peace and they are united, even if they fight. You'll see a father hugging his children and having chats with them like friends. I want to have my family to be like that […] (Joan, female, 17 years).

Although Laura, Sara, Akeem, and Joan had unique experiences, they all demonstrated similar judgement of their situation: they perceived that their parents' traditional social roles and expectations in their parent-child relationship were inconsistent with the social changes in the contemporary context. The excerpts also show that the participants failed to understand that even though there have been modern changes in family life, these changes are not necessarily universal. Thus, the parents' supposed conservative views and opposition to contemporary social changes seemed to have been in persistent conflict with the adolescents' expectation that contemporary social changes would reflect in their parents' social roles. Some of the adolescents linked this to their self-harm, as these incongruent expectations seemed to have frustrated them over time.

Another feature of the self-harm by Laura, Sara, Akeem, and Joan is its seeming unconscious "appeal character" (Stengel, 1964, p.618). These adolescents could be using self-harm unconsciously to communicate in an intense way an appeal to their parents/caregivers to consider adapting the performance of their parental roles and parent-child relationship expectations to contemporary social changes.

4.3.1.1.2. "…it was the work of the devil…": Diabolical control

Some participants attributed their self-harm to manipulations by unseen evil forces. They reflected that they had lost self-control and acted carelessly in the heat of the moment leading up to their self-harm.

> […] The whole [self-harm] thing happened so quickly, I drank the medicines without thinking. But I think, at that moment it was the devil at work. Yeah, some of these self-harm behaviours can be caused by evil spirits […] and we need the pastors to intercede with serious prayers for us young people (Bob, male, 15 years).

> I believe in God […] I think it was God who saved me and prevented me from cutting myself deeply that day […] I could have died through, like, excessive bleeding or something […] I think it was the work of the devil that made me cut myself, because God preserves life and the devil destroys life (Cathy, female, 15 years).

It appears from the quotations above that the self-harm of Bob and Cathy could be due to loss of impulse control (e.g., “I drank the medicines without thinking”). However, both adolescents seem to, unconsciously, externalise the agency or responsibility for their self-harm; they appear to absolve themselves of any personal responsibility for their self-harm. This externalisation and attribution of self-harm to diabolical control is not entirely surprising, as a key metaphysical belief in Africa (and for that matter, Ghana) holds that, there are evil spirits that participate in earthly life, directing and controlling the affairs and life course of humans; often, these spirits are believed to be responsible for the wrong deeds of people (Assimeng, 2007; 2010; Kpanake, 2018; Nukunya, 2016; Sarpong, 2006). Evidence from Ghana shows that a widely held perception is that self-destructive behaviours (and suicidal deaths) are due to diabolical control (e.g., Akotia et al., 2014, 2019; Osafo et al., 2018; Quarshie et al., 2018), while perpetrators of crimes sometimes tend to attribute the cause of their actions to evil forces (e.g., Quarshie et al., 2017). It is believed that these evil spirits can be warded off by engaging in religious rituals such as prayers, and with the help of divination mechanisms (Assimeng, 2010; Nukunya, 2016).

Summary: Generally (as captured in Figure 4.5 below), the in-school adolescents appear to link their self-harm to undesirable circumstances related more to their families than related to school, neighbourhood or peer relationships. Perhaps they found negative family situations more distressing than negative factors related to the school, neighbourhood or peer relationships. They self-harmed in response to emotional distress (i.e., intrapersonal difficulties) often triggered by interpersonal factors or circumstances. By attributing their self-harm to interpersonal factors and negative life events, the adolescents generally tend to, mostly, unconsciously, externalise the personal responsibility for their self-harm.

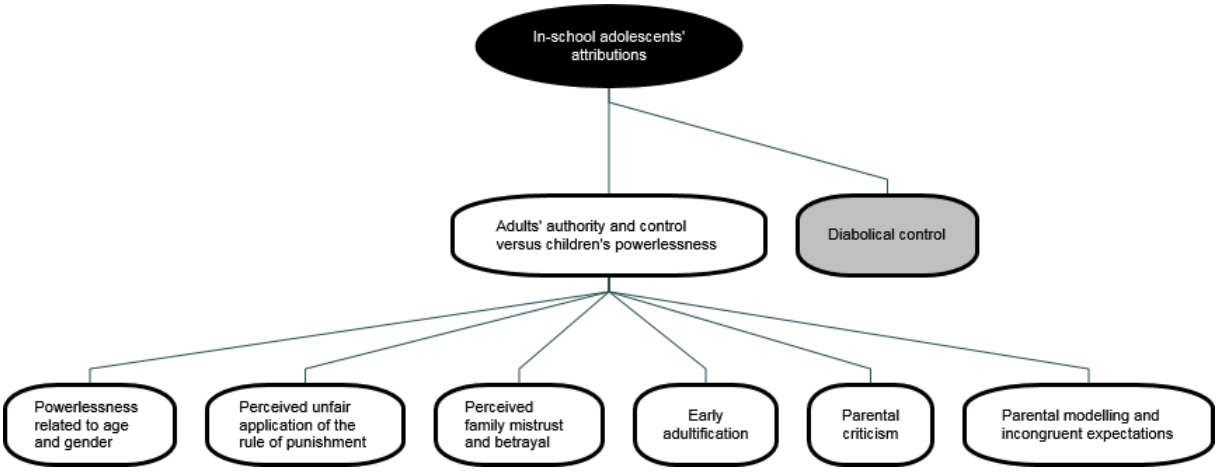

Figure 4.5. In-school adolescents’ attributions of self-harm

4.3.1.2. Major theme 2: In-school adolescents' meaning-making of self-harm

This major theme relates to how the in-school adolescents made sense of their self-harm; it covers the adolescents' expectations, motivations and evaluation of their self-harm. Of the 24 in-school adolescents interviewed, 70.8% (n=17) indicated that they had stopped self-harming and were not likely to repeat it in the future; 12.5% (n=3) reported that they were still self-harming because the circumstances 'leading' to their self-harm still persist; the remaining 16.7% (n=4) self-predicted that they might self-harm in the future, as the 'precipitating' factors of their self-harm remain only partially resolved. As discussed below, the adolescents' reflections on how they made sense of their self-harm were organised in terms of two main themes – each with subthemes: 1) motivation for self-harm, and 2) consequences and influence on recovery.

4.3.1.2.1. Motivation for self-harm

This theme relates to the adolescents' evaluation of their self-harm in terms of the purpose they sought to achieve with the behaviour. Their reflections covered three motivations: "enactment of tabooed emotions and contestations", "avenge excessive control and punishment by parents", and "responding to and management of negative emotions and circumstances".

4.3.1.2.1.1. "I wanted him to see that I hated what he was doing to me": Enactment of tabooed emotions and contestations

This sub-theme refers to the idea that the adolescents, particularly females, self-harmed as a means of contesting or protesting unbearable scolding, criticism, and (perceived) abuse by their parents. Generally, the Ghanaian culture forbids children and young people, even if they are right, from expressing negative emotions (e.g., anger, rage) towards their parents or elders; likewise, it is tabooed to (openly or privately) contest their parents' or elders' position on an issue – they are to "submit to parental control, advice, or authority" (Assimeng, 2007; Glozah, 2015; Gyekye, 2003, p.86). Young people who show insubordination or defy this norm of respect and obedience are punished, often by scolding or physical beatings (Imoh, 2013). The rationale for this taboo is to avoid any loss of face and to keep intact the honour and dignity of parents and elderly persons in the family. However, as shown in the quotes below, there are times when many young people come into conflict with this taboo; in this instance, some of the participants in this study adopted self-harm as a way to enact their negative emotions (e.g., frustration, anger) in protest

against unbearable (perceived) abuse, accusations, and criticisms by their parents or adult family members.

> One afternoon when he [my stepdad] called me to his bedroom to have sex with me, I refused, and I ran out of the house; I returned home in the evening. That night, he beat me for not wanting to have sex with him, and he had sex with me by force […] I didn't want him to sleep with me again, so I drank a [small] bottle of 'parazone' [bleach]. I wanted him to see that I hated what he was doing to me […] (Amina, female, 18 years).

> But that day, I don't know what came over me […], I told my mother in the face that 'you are the cause of all this confusion in the family […]' This got her angry and she gave me hard slaps on my face. I don't know, but I think I felt I had had enough, I felt better dead, the pain was too much […] When I entered the room, I saw a pair of scissors, I took it and cut my arm (Abbie, female, 16 years).

Amina had been sexually abused twice by her stepfather, when her mother was away on a business trip abroad. She indicated that her mother had advised her not to tell anyone about it and that she should remain obedient to her stepfather and allow her [the mother] to handle the issue. It is a taboo for Amina to disobey her mother's advice or resist her stepfather's demands on her to do "anything". Abbie had been physically beaten in turns by her father and older brother on accusations of being involved romantically with a man, which she said were untrue. However, in the heat of the moment, Abbie defied the norm of respect and obedience by openly expressing anger and citing her mother as the reason for the confusion in their family. Consequently, the mother in turn physically assaulted Abbie. Whilst Amina stated explicitly that she wanted her stepfather "to see that I hated what he was doing to me", it appears the self-harm of Abbie also represented an enactment and expression of tabooed emotions and a contestation against unbearable punishment by her parent.

Another possible interpretation is that, the reflections of Amina and Abbie present their self-harm as a relational act which could be described in communicative terms. Amina and Abbie seemed to have used self-harm as a "high intensity social signal" (Nock, 2008, p.159) when the use of less intense strategies of communication (i.e., speaking and crying) failed to stop the harsh physical punishments and abuse by their parents.

4.3.1.2.1.2. "…he'll probably be arrested and locked away": Avenge excessive control and punishment by parents

For some participants (mostly females), self-harm was a means of avenging and ending the excessive control and punishment by their parents, particularly their fathers.

> Sometimes when he [my father] gets angry, he is beating everybody up, and taking out his frustration on all of us, especially me. While in the

> kitchen, I look at the fire and I wonder if I burn myself and call the police that he did it, he'll probably be arrested and locked away. I normally thought if someone would ask me why your hand is burnt, I can say he did it. And I'm sure my mom will not defend him, neither will my siblings (Sheila, female, 16 years).
>
> "I thought that if I die, my ghost would haunt him [my father] every day, and I am sure the police would arrest him and jail him, 'cos he caused my death" (Alicia, female, 17 years).

Sheila reported that her father had become excessively abusive, physically assaulting her, her siblings and their mother, at the least provocation. Sheila indicated in her reflections that, her father's abusive behaviour could be because he had lost his job during the past one and a half years and was dependent on his mother (Sheila's paternal grandmother) for assistance to support his family. At the time of the interview, Sheila indicated that she still self-harmed (burnt her hands) any time her father assaulted her. Similarly, Alicia self-harmed whenever her father assaulted her. Alicia's father physically abused her whenever he was drunk while her mother was not at home. Sheila and Alicia thought that their self-harm could serve as a way not to only stop the abuses from their fathers but also as a way for society to find it legitimate to punish their fathers for the excesses in exercising their patriarchal right to control and punishment. An interesting point of reflection in both excerpts is that, Sheila and Alicia denied their agency or personal responsibility for their self-harm (as in, "call the police that he did it", "I can say he did it", and "he caused my death"). Although, their self-harm appears premeditated, both participants denied taking any active decision to self-harm, as they think that their fathers "caused" it. In another sense, these motives ("call the police that he did it", "I can say he did it", and "he caused my death") could also mean an attack, to try to change or stop the abuses by their fathers.

4.3.1.2.1.3. Responding to and management of negative emotions and circumstances

Some participants reported that they self-harmed as a way of managing acute negative emotions or as a response to emotional disturbance or negative (interpersonal) circumstances. In the excerpt below, for example, Sheila (who still self-harmed at the time of the interview) indicated that she self-harmed to distract herself from feeling angry or sad due to physical beatings by her father.

> "…and one time he hit me, but I didn't want to cry. So, I just walked to the kitchen, lit up the stove and I put my hand in the fire and I realised that the pain from the burnt stopped me from feeling sad and teary. It's like psychology – if you're crying because you are sad, and someone slaps you, you don't feel the sadness anymore, because the slap takes your attention". (Sheila, female, 16 years).

This excerpt appears to suggest that Sheila replaces her acute negative emotions of sadness or anger by inflicting physical pains on her hands (burnt from the stove). The self-inflicted physical pain serves to relieve her of the emotional pain inflicted on her by her father. This excerpt also seems to show that self-harm affords Sheila some control over her emotions. This is particularly evident, as she indicates that her choice of self-burning over other self-harm methods is mainly due to the chance to withdraw her hand from the fire.

> *Interviewer*: Why don't you use another method apart from burning?
>
> *Sheila*: Oh, my grandfather is a pharmacist, so getting an overdose is not a problem; medicines are available in the house. I just hate medicines. But with the fire, I can withdraw my hand if I have a second thought or my hand hurts badly. I get my hand in there anytime he [my father] gets me angry.

At the time of the interview, Sheila indicated that she still self-harmed, because her father had not stopped physically assaulting her; she burned her hands as a way of managing the negative emotions associated with the beatings by her father. Putting together Sheila's reflections (as in the case of some of the adolescents) under the two subthemes above (i.e., management of negative emotions, and avenge excessive control and punishment by parents) shows that, possibly, she had multiple motives for the same self-harm episode or that her motives varied from one self-harm episode to the other.

Similarly, other participants reflected that self-harm was their only means of obtaining emotional release, since they could not do anything to resolve the circumstances which triggered their emotional pain. In the example below, Joan (female, 17 years) described the difficulty she faced in seeking help from outside her immediate family circles to prevail on her father to minimise or stop abusing her physically, a situation she linked to her self-harm.

> *Interviewer*: Why didn't you talk to an elderly person in your family, for example, your grandpa or grandma, or your school counsellor about it, so that maybe they could come and talk to your father to minimise or stop beating you?
>
> *Joan*: "My grandparents are far away in our hometown […] Even if I had told our school counsellor, I'm not sure she could have come to change my dad's bad behaviour. That would even make matters worse for me, because my dad would say that I had taken family issues to a stranger, [briefly laughs gleefully], and he would beat me like hell, like, he would even beat me to death […] He has done that before, [um], there was a time my grandpa came to talk to them [my mom and dad] to stop their quarrels. It was my mom who invited my grandpa […] He [my dad] got angry about it and he was taking out his anger on us.

It appears that Joan was aware of seeking help from elsewhere to mitigate problems in her immediate family (at least she had seen her mother do that before). However, although there were other behavioural options Joan could have chosen to

minimise or stop the abuse by her father, she felt helpless and trapped by her anticipation that seeking help would backfire. In this respect, Joan's self-harm does appear akin to what has been described in the literature as a 'cry of pain': her self-harm can be interpreted as a response (or 'cry') to a family negative circumstance that has made her develop a sense of defeat, no rescue and no escape (Williams, 2001, 2014; Williams & Pollock, 2000). Thus, she self-harmed to manage or as a response to the painful emotions triggered by the beatings meted out to her by her father.

Furthermore, for some participants, self-harm was a way of altering a dissociative state. For example, a participant shared his experience as follows:

> [laughs briefly] I couldn't believe what I saw, like, it was as if everything was not real, it wasn't happening. On my way back home, it felt as if I hadn't seen what I just saw; like, it was a movie, I was not sure this had happened to me […], but when the bleeding started, and I felt the pain of the cut, I felt everything was so real and true (Morris, male, 20 years).

Morris had paid an unannounced visit to his girlfriend and caught her in bed with another man. Shortly after leaving the scene, Morris seemed to have become confused and doubtful of what he had witnessed. Upon reaching home, he went to their kitchen and cut his forearm with a knife. In his reflection, the self-harm was to clear his doubts and demonstrate the certainty about what he had witnessed. The self-harm appears to have changed the state of detachment from reality Morris was experiencing.

Thus, it seems, generally that many of the adolescents find their self-harm helpful in managing their negative emotions. However, for most of the adolescents, self-harm was not helpful in dealing with or improving the (interpersonal) circumstances linked to their self-harm, even though (as shared by Joan, for example) the ultimate goal for self-harming was to change the negative circumstances.

4.3.1.2.2. Consequences and influence on recovery

Here, the adolescents evaluated their self-harm in terms of its consequences and how the consequences influenced their recovery from the behaviour. Four subthemes emerged to describe this main theme: "self-harm as selfish act and social injury", "self-harm improves social relations", "self-harm worsens abuse", and "self-harm as religious transgression".

4.3.1.2.2.1. Self-harm as selfish act and social injury

With the benefit of hindsight, some of the adolescents evaluated their self-harm as an act of selfishness, which (could have) injured significant others. For some of the

adolescents, self-harm was personally helpful but socially injurious to significant others. They reflected that their evaluation of their self-harm as a selfish act which results in injuring significant others was personally helpful in preventing them from repeating the behaviour in the future.

> […] After some days, I thought about it [my self-harm] and I realised that it was a selfish thing I did, because I didn't think about my little innocent baby and my brothers who also support me. I brought my baby into this world and now I want to harm myself. What if I die? Who would take care of her? So, yeah, never again (Nadia, female, 18 years).
>
> My mom couldn't take it that I wanted to kill myself. I think she was so hurt, and as for my twin sister, it was worse, 'cos she cried and cried […] So, like, you can harm yourself alone, but it affects many people around you, yeah. It's [self-harm is] a bad behaviour (Julia, female, 17 years).
>
> Trying to hang myself did not help me at all, it rather created problems for me and my single mother. Like, my mother became sad for so many days, and I couldn't go to school for about two months because I was treating my neck […] Our neighbours also thought I had let them down (Steve, male, 17 years).

Nadia (female, 18 years) reported that she was a single mother of one, because she was raped at age 16. She dropped out of school for one and a half years, staying with her parents to support her through her pregnancy and delivery. In Nadia's reflections, shortly after resuming school when her baby was 6 months old, her parents began having conflicts, probably because of her teenage motherhood; her mother mistrusted her and continuously abused her physically and verbally based on an accusation of being involved romantically with a man. One day, shortly after being beaten on the grounds of the false accusation, Nadia went into her room and cut herself, bled profusely and was hospitalised. Nadia reported that her family tension did not end following her hospitalisation, and that made her struggle with the urge to repeat her self-harm. However, she indicated that her judgment that her self-harm could potentially affect her baby and hurt the emotions of her supportive brothers helped her not to repeat the behaviour. Julia and Steve, on the other hand, actually witnessed how their self-harm affected the emotions of significant others in their family and household. Interestingly, Nadia mentioned that following her hospitalisation for self-harm, her brothers became more supportive of her; Julia's mother became more supportive and her siblings became vigilant around her; and Steve's neighbours supported him and his single mother materially. However, generally, all three participants (Nadia, Julia and Steve) evaluated their self-harm as socially unhelpful and insensitive to the feelings of significant others around them. Thus, they judged their self-harm in the light of social relationships (or interpersonal changes) rather than in terms of their intrapersonal difficulties, and this appears to have provided a personal motivation not to repeat the behaviour.

4.3.1.2.2.2. Self-harm improves social relations

Like the experiences of Nadia, Julia and Steve above, some of the participants recalled that their self-harm led to improvement in their social relationships with significant other adults. In the latter instances, the improvement in social relationships occurred between the adolescent and a significant other adult, other than the "perpetrator" of the harsh punishment or abuse linked to the self-harm. A participant reflected as follows:

> She [my grandmother] said that harming or killing yourself is not good, it's a sin against God, and people who do that [self-harm] will not go to heaven. She also said, 'Lisa, you see, when someone sees what you have done to yourself, they may think because your mother is dead I'm abusing you and that I'm the one who cut you like this. Why, Lisa why?' She also said that, 'everything will be fine'. After that, I felt sorry and I was ashamed and unhappy with it [cutting myself]. She prepared some herbs for me to drink to clear the abdominal pains and another to treat the cuts […] We became so close, she would always check on me and give me money, even if it's little (Lisa, female, 19 years).

Lisa lived with her grandmother; her biological mother had died four months earlier. Lisa cut herself a few hours after her father (who lived in a neighbouring town) had sexually molested her, in return for money to pay her school fees. Lisa described her relationship with her grandmother as emotionally distant and less supportive prior to her self-harm. However, in her reflection, although unexpected to her, her self-harm "led" to an improvement in her relationship with her grandmother; her grandmother became emotionally more engaged with her and financially supportive of her.

But, a closer look at the excerpt reveals a couple of interesting moral twists to Lisa's reflections, which might have influenced the positive changes in her relationship with her grandmother. First, the introductory part of the excerpt underscores the grandmother's judgment of self-harm as a moral and religious transgression, a position that is strongly held in Ghana (e.g., Akotia et al., 2014; Osafo et al., 2013; 2018). The second point relates to the grandmother's expressed fear that "when someone sees what you have done to yourself, they may think because your mother is dead I'm abusing you…" Thus, it is possible to suggest that perhaps the change in the grandmother's relationship with Lisa might have been rather motivated by the grandmother's (understandable) fears related to potential stigmatisation of her family due to Lisa's self-harm (or attempted suicide) and possible accusation of child abuse by the community. Put differently, it is possible that Lisa's grandmother might have improved her relationship with Lisa in the aftermath of Lisa's self-harm not only as a way to prevent future self-harm by Lisa, but also to avoid being accused of child abuse and social stigmatisation of her family due to Lisa's self-harm. In short, this sub-theme seems to suggest that,

perhaps within the Ghanaian context, self-harm by itself may not necessarily “lead” to positive changes or improvement in social relationships with significant others, but rather the fears held by significant others about the potential social implications of self-harm may inform positive changes in social relationships with persons who self-harm.

4.3.1.2.2.3. Self-harm worsens abuse

Most of the participants who linked their self-harm to harsh punishment or abuse reported that their self-harm led to immediate relief of their emotional pain; however, the harsh punishment or abuse linked to or which followed the self-harm worsened, particularly, where the self-harm was discovered because it resulted in hospitalisation. Many of the participants who self-harmed shortly after being scolded or physically punished by their parent or an adult family member (i.e., participants who used self-harm as a silent protest against unbearable scolding and punishment by their parents or adult family members) recalled experiencing worse forms of verbal and physical abuse in the aftermath of their self-harm. Most of these participants used severe or lethal means of self-harm, which led to hospitalisation.

> The next day, after we had returned from the clinic, she [my mother] started again. She said, ‘so you’ve decided to disgrace this family, right? You want to kill yourself to shame this family; is that where it has gotten to? We shall see whether you gave birth to me or I gave birth to you’. And she also said, like, ‘we just went to spend money unnecessarily at the hospital because of your foolishness and disobedience’. So, nothing changed, the beatings became even worse (Nadia, female, 18 years).

> [..] When we came back [from the hospital], like, I was feeling dull, so I sat in the hall, not knowing my mom went to town to collect debts from some of her customers. She called my phone, but I didn’t hear. When she came back, oh my God, the insult was like hell. She said all sorts of things, like, now I’ve become one of those insensitive girls who don’t care about how their family feel, they wake up and just commit suicide to disgrace their family. But that’s not true, and she kept insulting me (Anna, female, 18 years).

The reactions of the mothers in the above excerpts were most plausibly informed by two key cultural realities. The first reality is related to the general collectivistic orientation of the Ghanaian society; in this sense, the obligation to preserve family honour and image overrides individual interests at all times (Gyekye, 2003; Nukunya, 2016). Young people are expected to put their family’s honour first, before personal needs and interests. Consistent with this cultural ideal, in reprimanding their daughters, both mothers in the excerpts situated their daughters in the context of the collective good of the family, and the potential of their daughters’ self-harm to bring shame and dishonour to their families. Interestingly, both mothers failed to consider the individual emotional distress informing the self-

harm of their daughters; the focus was mainly on the status and relational good of the family.

The second cultural reality is that attempted suicide and suicide are morally proscribed and legally criminalised in the Ghanaian society (Act 29, 1960; Adinkrah, 2013, 2016; Mishara, & Weisstub, 2016; Sarpong, 2006). Persons who self-harm (or even die by suicide) and their families are often subjected to social stigma and shame by the larger community, making self-harm a socially injurious act for the family (Osafo et al., 2011; 2017). Thus, families tend to be the first to punish members who self-harm, mostly by severe scolding or physical beatings (e.g., Osafo et al., 2015), to deter same and other members from future attempts. It stands to presume therefore that, perhaps, the in-school adolescents in the present study who used self-harm as a silent protest against punishment by parents or adult family members experienced worse forms of the punishment because both the protest and self-harm are proscribed by the culture, the infraction of which threatens family honour and as such attracts severe punishment to ensure deterrence.

Finally, it is possible that the unplanned cost of hospitalisation of Nadia and Anna for self-harm might have also contributed to upsetting their parents. Perhaps their parents interpreted this as wasting their scarce financial resources on a health situation that was due to socially unacceptable reasons (i.e., self-harm). Furthermore, the hospitalisation might have led to the interpretation of the self-harm as suicide-intended, an evidence which potentially might have given rise to the negative attitudes and reactions of the adolescents' parents. Again, it is possible that, to the parents, their adolescents' hospitalisation might be interpreted by others (e.g., nurses, physicians, neighbours) as indicative of poor, or a failure in their parenting. It is noteworthy that all the adolescents who reported experiencing worse forms of abuse in the aftermath of their self-harm indicated that, the abuse did not deter them from secretly self-harming, and eventually, factors other than the worse forms of the abuse rather influenced their decision to stop self-harm (e.g., their personal reflection that self-harm is a selfish act or religiously sinful).

4.3.1.2.2.4. Self-harm as religious transgression

For some adolescents, their self-harm amounted to a religious transgression. As indicated in the excerpts below, some of the adolescents reflected that their self-harm was a breach of their religious tenet, a judgement which made them remorseful with a resolve not to repeat the behaviour in the future.

> I feel bad about it [my self-harm] […] So, you don't have to do something to hurt yourself or even try to kill yourself, no matter what you are going through, 'cos the Bible says that our body is the temple of the Holy Spirit, so

> you can't hurt it [your body] or destroy it [your body] […] It is a sin to hurt your body intentionally, and the wages of sin is that you will die forever in hell (Mina, female, 17 years).
>
> Anytime I remember what I did, like, if I picture cutting myself, I feel so bad and guilty, like, I regret it. It's just so wrong, and I always pray for forgiveness from God, "cos it's a sin to, like, engage in self-harm (Morris, 20 years).

Although previous studies from Ghana on public attitudes towards suicidal behaviours (e.g., Akotia et al., 2014; Osafo et al., 2013; 2018) have shown that generally Ghanaians tend to view suicidal behaviours within a moral and religious lens, what was not clear from the views of the present participants is whether they were aware of these moral and religious tenets against self-harm prior to their own self-harm. Morris's and Mina's expression of regret and remorse could be pointing to two possibilities: they accept responsibility for their self-harm and had knowledge of the religious tenets against self-harm prior to engaging in the behaviour. They indicated, at the time of the interview, that they upheld strongly these religious tenets against self-harm and were certain not to repeat the behaviour in the future.

Summary: Generally, the adolescents tend to view self-harm as a socially undesirable behaviour; however, the enactment of self-harm brings immediate emotional relief, making self-harm intrapersonally helpful. Also, the adolescents observed that, if discovered by significant others, self-harm can have negative social consequences (e.g., physical abuse), although for others the discovery by others led to improvement in interpersonal relationships (e.g., receiving empathy and help from others). The adolescents tend to self-harm in order to attain one or both of intrapersonal and interpersonal motives. In sharing their evaluations of and attitudes towards self-harm, the adolescents focused less on their intrapersonal experience of the behaviour, but more on the socio-cultural and religious representations of self-harm in Ghana: self-harm is socio-culturally proscribed and religiously sinful. Figure 4.6 below provides a graphical summary of how the in-school adolescents made sense of their self-harm

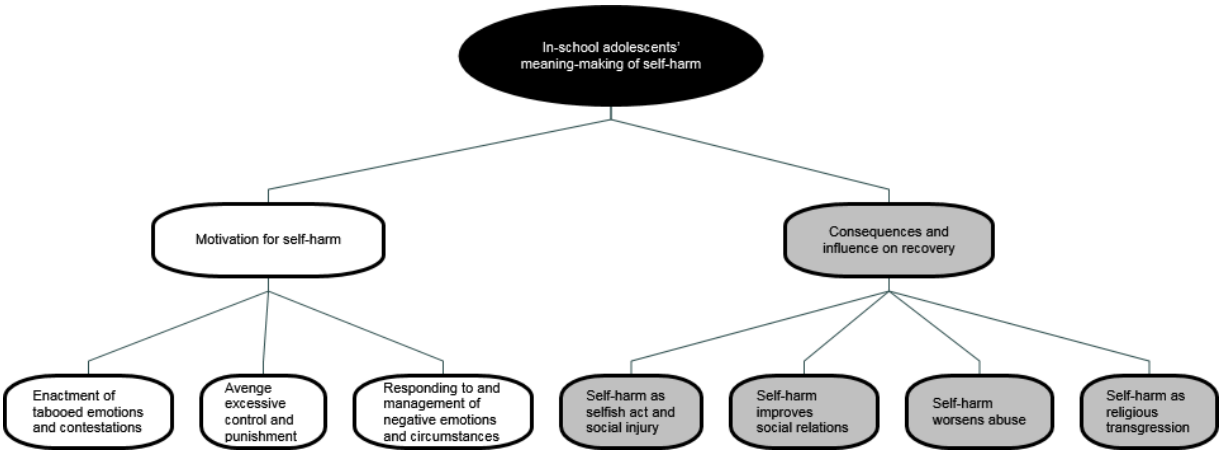

Figure 4.6. In-school adolescents' meaning-making of self-harm

4.3.2. Key themes from interviews with street-connected adolescents

The themes that emerged in the analysis of the transcripts of the interviews with the street-connected adolescents were organised under two main broad themes: "factors linked to self-harm", and "perceived factors facilitating recovery or helping adolescents to stop self-harm".

4.3.2.1. Major theme 1: Factors linked to self-harm in street-connected adolescents

Each of the 12 street-connected adolescents interviewed had a unique story; no two street-connected adolescents had the same narrative. However, most of them held similar attitudes and reported similar lived experiences in their families of origin and within the street context. Four of the 12 adolescents reported that their first and only lifetime episode of self-harm happened while living with their original families, before coming into the street living situation, whereas eight reported that they self-harmed as street-connected adolescents (i.e., while living on the streets). The evidence of the various attributions made by the adolescents seemed to suggest that the street-connected adolescents who self-harmed while living with their original families did so as a response to "adultification in their families of origin", whereas those who self-harmed while in the street situation did so as a response to

the “acculturative stress of street living”, and the “conflict of conduct norms in the charity facilities” they attended. Consequently, to identify the key circumstances leading up to the adolescents’ self-harm, I divided the street-connected adolescent interview transcripts into two groups: adolescents who self-harmed while living with their original families and adolescents who self-harmed while in the street situation. In developing the categories for the main themes, I stayed close to the text of each adolescent’s narrative related to their life events prior to the enactment of self-harm.

4.3.2.1.1. Self-harm as a response to adultification in family of origin

In this study, all the street-connected adolescents who self-harmed while living with their original families felt unsupported, unloved, uncared for and neglected, due to adultification. Generally, the adolescents in this group had disrupted family backgrounds characterised by a weakened safety net due to parental divorce, parental death, and absent fathers or mothers. Each of the four adolescents in this group was placed in the kinship foster care of an extended relation, mostly a grandmother. All the adolescents in this group (n=4) had dropped out of primary school owing to lack of financial support and had troubled families. One girl lived with her grandmother and had lost her biological mother two months before she self-harmed, she had seven adult siblings living and working in other cities. One boy had never known his father, he lived with his aunt in a village, but his mother had migrated to the capital city, Accra, in search of work. Another girl lived with her grandmother, but she had not seen her father during the previous eight years and her mother was in police custody for drug peddling offences. Another boy lived with his grandmother, as both parents were divorced. All four adolescents in this group indicated that they had adult siblings and extended relations.

The four adolescents reported that their basic needs, particularly, food and education were not provided for while living with their families. As children in their families, perhaps they expected that, as their culture prescribes, their parents, adult siblings and extended relations would support them and provide for their basic needs. However, each of these adolescents mentioned that they were made to work as adults, providing material and instrumental support to their adult relatives, to the neglect of their own personal needs, thereby making them feel unloved and uncared for. As children, they wielded limited or no control or power in the family to change their life situation, and their lack of education and younger age meant that they could not be meaningfully employed. Thus, the adolescents experienced a heightened sense of hopelessness, powerlessness, and neglect, which seemed to have been linked to their self-harm.

> Before my mother died, I was taking care of her for the whole time when she was ill. By then, I was only 15 years old; I dropped out of school. Every day, I bathed her, fed her, and changed her clothes and other things […] My older siblings came around, but they didn't care if all was well with me […] Things were difficult, sometimes even food to eat was difficult to get. My grandmother was not working. I did not know what to do. I felt nobody in this world liked me, no one loved me or cared about me, so I wanted to die […] (Maud, female, 19 years).

Another adolescent said,

> I carried firewood from the farm, long distance, to the house, most of the time very hungry. My adult brothers and aunt didn't care whether I had eaten or not. I used to bundle and sell firewood to raise money for my daily upkeep and to pay my exam fees at school. Sometimes, I would sell the harvest from my grandma's farm and bring her the money to take care of herself, because she was old and weak. I was always working, I had no friends and I was not happy, I wanted to leave this world (Lewis, male, 15 years).

The generally disrupted family circumstances seemed to have necessitated the adultification of these adolescents, as for example, the grandmothers were not economically active to provide for the material, financial, and educational needs of the adolescents. The adolescents felt burdened with excessive work within the household and daily caregiving roles. These adultified adolescents experienced a sense of neglect, as they took care of their adult relatives, whilst nobody provided for their own needs. This sense of neglect seemed to have been worsened by the perception of the adolescents that their adult siblings, who were mostly living in cities, did not show any care towards them. The adolescents positioned themselves in their narratives as dutiful minors in their families, having the understanding and expectation that their adult siblings and extended relatives would in turn provide for their needs including food, education, and emotional and financial support. Thus, over time, the adultified adolescents seemed to have lost the sense of meaning as children and developed a sense of hopelessness and neglect, which appears to have been linked to their self-harm.

It is noteworthy that, although the search for the reasons for street living by the participants was beyond the scope of this study, more than half of the participants in this interview study (n=7) mentioned that they left their families of origin to live on the streets of Accra mainly in search of relief and independence from the burden of providing care for their adult relatives to the neglect of their own material, financial, educational and emotional needs. Others were born on the street (n=2), while some participants (n=3) cited migration with their parents to Accra for work opportunities as the main reason for their street living. Interestingly, on the streets, these young people seemed to choose inherently more adult roles in order to survive.

Of the eight adolescents who self-harmed while in the street situation, seven attributed their self-harm to the distress associated with “acculturation to street life”. They characterised their self-harm as a response to the distress they experienced when they encountered the harsh and unruly culture of street living, when they first moved from their original families to live on the street. In contrast, one participant attributed his self-harm to the distress related to “conflict of conduct norms” at the charity facility he attended. He linked his self-harm to the distress he experienced when he first encountered the controlled culture of the charity facility he attended. The experiences of the distress due to the cultural differences (between family of origin and the street, and between the street and charity facility) made these adolescents feel helpless and powerless, which some of the adolescents linked to their self-harm.

4.3.2.1.2. Self-harm as a response to acculturative stress of street living

“Acculturative stress is the psychological impact of adaptation to a new culture” (Smart & Smart, 1995, p.25). Seven adolescents attributed their self-harm to the acculturative stress they experienced during the earlier weeks when they came into the street living situation for the first time. When they first came to the streets, they felt street living was difficult and harsher than they had imagined or expected. Their initial negative experiences of the general difficult realities of the street culture made them hopeless and powerless, which they linked to their self-harm. An adolescent boy shared his experience thus,

> […] When I came here (I mean Accra) for the first time, things were difficult, usually no food to eat, no money to buy food, no work to do, nothing. Sometimes I could be walking in the market and someone would just scream “julɔ eei!” [thief!], when I had not even touched anything or anybody, then people from nowhere would just pounce on me and beat me up, because no one knew me here, I was new. Luckily, after a few days, I began selling polythene bags, but the man I used to work for accused me of stealing his money, but I did not do it. He beat me up and sacked me from his business. That day, I had worked for long hours and made good money for him, but he didn’t pay me my commission for the day. That night, thieves attacked me and made away with my little savings. They had knives and so I couldn’t struggle with them, they could have hurt me or even killed me or something like that […] I felt there was no need to continue living […] (Abdul, male, 16 years).

Later in the narrative of Abdul, he recounted how someone had saved him from self-drowning at the beach and how he had been bullied by other street-connected boys during the following few weeks. He later had a friend, a 14-year old street-connected boy who was born on the street. In most situations and interactions, his 14-year old friend showed strength and fortitude. Abdul indicated that after a few days of observation, he learnt a motto from his 14-year old friend that, in order to

survive in Accra, “esa ni ohiɛ awa, kaaha ni moko shishiu bo yɛ biɛ” [you have to be strong, don’t let anyone cheat you here]. According to Abdul, this observation inspired him to develop a sense of self-defence and a determination to survive in the streets of Accra. Certainly, this would not be an easy process for Abdul, but given that he had lived on the street for two years (as at the time of the interview), he might have had to face and adapt to the harsh realities on the street with some level of strong outlook.

A female participant also shared her new experience of the street situation which she linked to her self-harm, as follows,

> I had been here [Accra] with my friends for just two weeks […] He said he could show me where I could get more customers, so I went with him. But when we were coming back he made some calls and he made us pass by where his friends lived […] They gave me Malta Guinness, not knowing they had put medicine in it, and that made me sleepy […] All of them slept with me […] It was two of my friends who later came to find me there in pain and brought me here [where we live] […] I felt bad, I felt empty. I tried to swallow plenty of tablets so that I would die, but my cousin (the one who brought us to Accra) told me that if I wanted to live here [in Accra] then I would have to be strong, stay out of trouble with boys I don’t know, and stick with the girls all the time and never walk alone […] That statement my cousin made is what has kept me safe to today (Efia, female, 16 years).

Street-connected children and young people are vulnerable to exploitation, attacks, disease, unemployment, sexual abuse, and hunger, which can be distressing, particularly, for newcomers to street living. For half of the street-adolescents in this study (n=6) their self-harm seemed to be partly attributable to the distress they experienced as newcomers to the street culture. Their initial encounter with the unpleasant happenings and harsh conditions of street living seemed to have been linked to their self-harm. However, as shared in the excerpts above by Abdul and Efia, over time, some newcomers to the street culture acquire the attitudes and strengths for surviving street life.

Furthermore, although the reflections of Abdul and Efia highlight the difficulty of street living for newcomers, their self-harm could be pointing to a “cry for help” and a “cry of pain” motives respectively (Rasmussen et al., 2016; Scoliers et al., 2009). Plausibly, Abdul’s self-harm seemed interpersonally motivated to obtain help from others, whereas Efia self-harmed as an expression of her unbearable intrapersonal pain of defeat triggered by the sexual abuse.

4.3.2.1.3. Self-harm as a response to conflict of conduct norms in charity facility

Some street-connected adolescents who attend charity facilities may initially find it distressing when they are not allowed to conduct themselves in certain ways deemed inappropriate by the charity facilities. One of the participants attributed his self-harm to the distress resulting from the conflict of conduct norms he experienced when he initially attended a charity facility.

> When I started coming here [charity facility] at first, if someone troubled me and we started a fight, the [social] workers here would come and separate us and tell us to stop the fight. But whenever it happened that way, I felt cheated and angry because I was not allowed the chance to fight the person or beat the person as I wanted to. So, in the anger I hit my head several times to the wall […] You can meet the person somewhere for another fight, but he can come and report you here [charity facility] the next day, and you will be stopped from coming here [charity facility] again (Edem, male, 14 years).

Whereas the street culture permits "freedom" and unruly behaviours (e.g., fighting, stealing, attacks etc.), charity facilities enforce a controlled culture of obedience, law and order, and generally endorse self-controlled behaviours. In the street context, there are no strict or restrictive code of conduct, although there may be norms of group behaviour and street sub-culture. A view shared by another participant (female, 15 years) helps to elucidate the retaliatory ways in which street-connected young people resolve interpersonal conflicts.

> […] Over here [at the charity facility], they teach us [street-connected young people] how to forgive when your friend offends you, but this people [street-connected young people], hmm, they don't forgive. If you offend them, they don't even think twice about it, they will retaliate with equal measure and sometimes they won't even talk with you for weeks or even months. As for others [some street-connected young people], they would actually beat you up for offending them" (Latifa, female, 15 years).

Even though in this quote Latifa projects and positions herself as an exception to street-connected young people who adopt retaliatory means of interpersonal conflict resolution, her view seeks to present the general nature of how interpersonal conflicts are resolved among street-connected young people. Having dropped out of school during the last two years and lived on the street for a long time, Edem (in the penultimate quote) was accustomed to the use of violence, confrontational and retaliatory means of resolving interpersonal conflicts. However, that means of conflict resolution was against the rules of conduct in place at the charity facility he had started attending and he would not be allowed to conduct himself in such violent and aggressive manner there. This frustrated and angered him, which he linked to his self-harm.

Summary: Street-connected adolescents who self-harmed while living with their families of origin attributed their self-harm to their lack of control and sense of neglect due to early adultification; some also linked their self-harm and choice of street living to early adultitifcation in their families of origin. Newcomers to street living linked their self-harm to the unexpected acculturative stress of abuse, attacks and exploitation; and newcomers to street-connected charity facilities linked their self-harm to their distress of lack of control resulting from the conflict of conduct norms between street life and charity facilities. Figure 4.7 summarises the factors linked to self-harm by the street-connected adolescents.

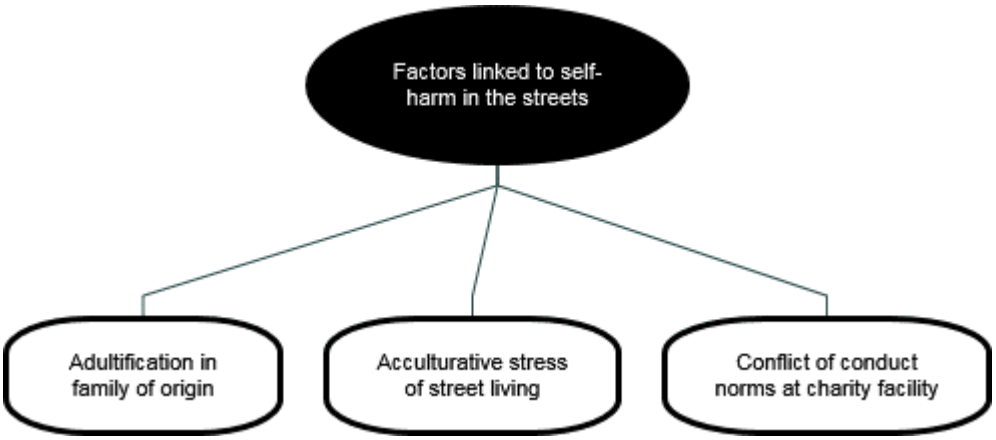

Figure 4.7. Factors linked to self-harm by street-connected adolescents

4.3.2.2. Major theme 2: Perceived factors facilitating recovery or helping to stop self-harm

Each of the 12 street-connected adolescents reported that they had stopped or recovered from self-harm and rated the probability of future self-harm as non-existent, at the time of the interviews. Most of the street-connected adolescents (n=7) reported that they had self-harmed only once in their lifetime, whereas five participants reported that they had repeated the behaviour at least once (see Table 4.2). Notably, both repeaters and non-repeaters evaluated their self-harm as unhelpful and a potentially dangerous behavioural choice, although some reported that they had obtained immediate emotional release from the behaviour. They indicated that they relied on some sources of support and personal strengths to stop or avoid repeating self-harm: “reliance on peer and surrogate family support”, “reliance on charity support”, “early adultification in the streets”, and “emotion regulation with unhealthy substitute behaviours”.

4.3.2.2.1. "…I can borrow money from my friends…": Reliance on peer and surrogate family support

Many of the adolescents (n=8) reported that they relied on the surrogate family and friends they had on the street for financial and emotional support and protection. A group of four, five or more street-connected children and young people typically constitute themselves into a peer group or a "family" who share the same sleeping place or work together. Reliance on this peer group and surrogate family support arrangement was especially helpful for the newcomers to street living who were experiencing the distress of adapting to the street culture. Some of the newcomers to street living who reported their self-harm as due to the distress of acculturation indicated that reliance on the support of their peers and surrogate families on the street was helpful in preventing a repetition of self-harm. For instance, in response to the question, "at which other point in your life have you ever harmed yourself again", Abdul (male, 16 years) said,

> [mm…] there were times I thought about it, maybe to do something bad to myself, when I had no money to buy food and things were hard. But I didn't actually do it. I don't harm myself because now I can borrow money from my friends and pay back later or maybe I can go to help some of my friends with their work and when we finish I get some money for myself, you understand? So, as for self-harm, no, I have not done that again. The thoughts of it come into my mind when things are very hard, but because I help my friends when I have, they also help me when I need help.

The experience shared by Abdul seems to suggest that even though the harsh realities of street living could present as a potential risk factor for thoughts about self-harm, support from friends and members of surrogate families on the street could mitigate the transition from thinking about self-harm to actually enacting self-harm. Having a peer support system infuses hope and serves as a buffer in difficult times. Also, the excerpt implies that the peer group or surrogate family support system among street-connected children and young people is undergirded by the principle of reciprocity. Members of the group who support others are also supported when they are in need.

4.3.2.2.2. Reliance on charity support

All the participants in this study knew about and had positive regard for the charity facilities that provide support for street-connected children and young people within the Greater Accra region. Among other things, the charity facilities provide free drop-in social and educational events, meals, and recreational space for these young people, but more importantly (through the employed services of trained social workers, and in some case psychologists), they organise street-child outreach programmes, street-baby care programmes, and provide temporary

shelter and short-term vocational skills training for street-connected children and young people. The participants in this study, particularly, those who were interviewed for this study at the charity facilities indicated that the support that they obtained from attending the charity facility helped them in stopping or avoiding self-harm. According to a male participant,

> I used to have the idea that I should kill myself or just leave this world, anytime my mother refused to give me money to buy food or when she beat me or whenever she left me alone in the house and went to her boyfriend to spend the weekend […] I won't harm myself again and I don't think something can push me to do that again, because now I come here [charity facility] daily, except Saturdays and Sundays (Ato, male, 13 years).

Ato lives with his single mother in the street situation, but he dropped out of school a year earlier and he had been attending a charity facility for the past three months. His mother has consented to his attendance at the charity facility. Among other things, he participates in free literacy and numeracy classes, gets free food and protection from physical abuses, and makes friends at the charity facility. The support from the charity facility seems to have provided Ato with a meaningful childhood and more importantly compensated for the inadequacies and lack of support he experiences at home – a situation which has infused hope and confidence in him that he would not self-harm.

Other participants also reported that they received continued help (from the charity facility they attended) shortly after their last episode of self-harm. The continued help covers psychological, material and nutritional, and educational support. Specific examples include individual and group counselling, psychoeducation, free meals, vocational training, recreational space, among others.

> No, I feel okay. I don't think I'll attempt it [self-harm] again. […] So, when the man [street social worker] brought me here [charity facility], they made a certain woman who works in a hospital [a clinical psychologist] talk to me […], they gave me food. There is shower you can use, [um] you can wash your clothes, if you are tired you can have a place to rest, or [um, um]. But the food they give us here [charity facility] is sometimes the same, example, rice or porridge […] I am sure they [charity facility] have their difficulties too, maybe they don't get enough money to take care of us. Now they have promised to take me through vocational training in bakery, [um] maybe I will start next month (Lois, female, 16 years).

The charity facility received a report that Lois (a newcomer to street living) had attempted to kill herself by drinking rat poison during the previous weekend. The charity facility confirmed the incident through further investigations which revealed that Lois attributed her self-harm to hunger, unemployment, and sexual abuse and attacks on the street (field notes, Accra, 2017).

4.3.2.2.3. "I was my own mother and father": Early adultification in the streets

Some of the adolescents, specifically, those who migrated from other regions to Accra, mentioned that upon reaching the streets of Accra, they realised early on that they were on their own; they were their own parents and therefore there was the need to take on the role of an adult to care and provide for their own needs. Two participants reported that they needed to survive in order to take care of themselves; one adolescent (Maud, female, 19 years) indicated that she had the simultaneous responsibility of working to provide for her own personal needs and those of her child's survival in the street situation; three adolescents indicated that they work to provide for their personal needs and the needs of their family dependents back in their home towns and regions.

> [yeah…] At first when I came here [Accra] my friends used to help me with money to buy food, but after a few days when I started getting my own money from the kayayei[32] work, they stopped giving me the money and free things […] Everybody contributed to the food we cooked and we all paid for the place where we slept. At that point, I realised that I was on my own, I was my own mother and father […] So sometimes even if you are sick and the sickness is not serious, you still have to work else you'd go hungry. Doing your own work to take care of yourself makes you strong and keeps your mind clean from thinking evil. I can't remember that last time I even thought about self-harm or suicide [Mimi, female, 16 years].

Mimi had attempted to kill herself by drinking weed killer while she was living with her family of origin outside the Greater Accra region. She reported that her parents died when she was 14 years old and she felt neglected by the rest of her family. Therefore, she joined a group of girls who came to Accra to work as kayayei to raise money during school vacation, but she has not returned to her hometown since then.

Another interviewee said,

> […] if I harm myself or even kill myself, who would take care of my child? If I cut myself again, where will I get the strength to take care of myself and my daughter? There's no one, my grandmother is very old now, my uncaring father is also dead, and my older brothers and sisters are not available to help me. So, I don't think I would harm myself, no matter what [happens]. I love my daughter, I don't know what she'll become in the future. So, I do

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[32] "Kayayei" is the plural of "kayayoo", a term used by the Ga people, the indigenous ethnic group in the Greater Accra region of Ghana, to refer to women or girls who engage in carrying goods for a fee. Etymologically, the term, kayayoo, is derived from two words, one from Hausa and one from the Ga language: "kaya" in Hausa means wares or goods, whilst "yoo" in the Ga language means woman or girl – the plural of "yoo" is "yei" in the Ga language (Agarwal et al., 1997). Thus literally, "kayayei" translates "load-women" or "load-girls". Usually, kayayei use large basins to carry goods and loads for shoppers, shopkeepers, and traders for a fee.

> any work, and I save the little money I get to make sure that I don't suffer with my daughter here (Maud, female, 19 years).

Maud is a single mother of a 16-month old daughter. According to Maud, the father of her daughter (a street-connected young man) denied being responsible for her pregnancy. Before taking to street living, Maud had self-harmed by cutting her belly area, while living with her grandmother in her hometown outside of the Greater Accra region.

Another teenage girl shared her view as follows,

> […] the thing is that, you don't even get the time to think about harming yourself [laughs briefly]. My aged parents depend on me. The old people say that, if your parents look after you for your teeth to grow, you also have to look after them when they are losing their teeth, you see? So why should I kill myself or intentionally hurt myself, for what? I am here [in Accra] alone; no mother, no father, nobody, apart from my friends. Since, I came to Accra, I have not even thought about it, to harm myself [shakes head in repulsion]. When I wake up in the morning, I say my prayers, then I move straight to work. I eat what I want, I buy what I want, so why self-harm? (Barikisu, female, 17 years).

At age 11, Barikisu attempted to kill herself by jumping in front of a moving motorbike, while she was living with her family of origin outside the Greater Accra region. She reported being over-burdened with household work, caring duties, and physical abuses at home, which prevented her from going to school regularly and made her generally unhappy. At age 16, she came to Accra in the company of her younger sister and another teenage girl to work as kayayei. The three of them came to stay with five other young women, who hailed from the same home-region but were already based in Accra also working as kayayei. Periodically, Barikisu sends remittance home for the upkeep of her aged parents.

This theme of "early adultification" seems contradictory and interesting because on the one hand adultification in the context of the family was reported by some of the adolescents as linked to their self-harm and, in some cases, informing their decision to move from their families to live on the streets of Accra. On the other hand, adultification in the street context serves a "protective" function against self-harm. Inferring from the experiences shared by Mimi, Maud, and Barikisu above, the adolescents seem to interpret early adultification in the street situation as a resilience-building experience which facilitates character formation and self-efficacy. Also, as adultified adolescents living on the streets, they seem to have a sense of financial autonomy and control over their personal livelihood, and keeping peer relations, compared to when they played similar adult roles in their families of origin, as indicated, for example, by Barikisu above – "I eat what I want, I buy what I want, so why self-harm?" In other words, this reflection seems to suggest that in the

family context, an adultified adolescent is required to play only adult roles to support their family, but they are not allowed to exercise the rights associated with being an adult (e.g., participation in decision making, control over earnings from work, and autonomy over social relationships). However, adultified adolescents in the street context (particularly, those who have left their families to live on the streets) exercise the responsibilities of an adult and also enjoy the rights of an adult. It seems, therefore, that the protective function of adultification against self-harm among street-connected adolescents derives more from having the full chance to exercise the rights of an adult than only performing the responsibilities of an adult.

4.3.2.2.4. "I won't hang myself because of what somebody says": Emotion regulation with unhealthy substitute behaviour

Some of the adolescents reported that they distract themselves from negative emotions related to events which could potentially trigger self-harm, by pursuing alternative behaviours. Mostly, the alternative behaviours are not intended to harm the self but are equally self-destructive at least in the long-term. The experiences shared by some of the adolescents were similar to the following,

> Sometimes, where I live [slum name[33]], some of the neighbours accuse me of things I haven't done […] They tempt me a lot, but I keep [my] cool […] When it happens like that and I feel very angry, because I don't want to fight anyone or beat up somebody or even do something to myself, I just leave the scene. I go out to our base to smoke [marijuana] and sit there for a while before I come back home, or sometimes I enter my room and take one or two tablets of tramol[34] so that I can sleep off […] Because I don't want all the false accusations to bother me or push me to do something bad to someone or to myself. I won't hang myself because of what somebody says about me which is not true. So, the medicine [tramadol] helps a lot (Lewis, male, 15 years).

In this quote, Lewis (male, 15 years), who lives alone in a slum, indicates that fighting his neighbours would compromise his residence in the slum, as the police

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[33] Name of slum anonymised for ethical reasons

[34] Tramol is the informal term used in Ghana in reference to the painkiller tramadol. Tramadol is a painkiller that is normally prescribed for pain ranging from moderate to moderately severe, often among cancer patients, after surgery, or for patients experiencing chronic pains; it can have a stimulating effect or a sedating effect, depending upon the dosage administered (Salm-Reifferscheidt, 2018). Non-medical use of tramadol is currently a challenge in Ghana, particularly, among young people – who are students, drivers, sex workers, street-dwelling, and even farmers (Citifmonline, 2017; Salm-Reifferscheidt, 2018). Access has been blamed mainly on smuggling and illicit distribution by untrained and unlicensed vendors in the open markets, who sell it at cheaper prices (Citifmonline, 2017; Klein, 2019; Salm-Reifferscheidt, 2018; Yorke et al., 2019).

could be called in. He recalls his unpleasant experience of attempting to hang himself at age 12, a memory which makes self-harm unattractive to him now. Thus, the strategy of self-regulation helps to prevent any untoward reactions by him to his neighbours or himself. However, where the negative emotions accompanying the accusations are hard for him to take, he distracts himself by adopting substitute behaviours [i.e., smoking marijuana or ingesting tramadol] that are unhealthy, but which he finds to be helpful in avoiding self-harm or reactive aggression.

Summary: Generally, the street-connected adolescents in this study reported that they were able to stop or recover from self-harm by relying on the emotional and material support of their friends and surrogate families on the streets and the charity facilities they attended. Some adolescents also took on adult role of being self-reliant and fending for themselves, a situation which gave them a greater sense of control and autonomy over their resources and relationships; whilst others adopted equally unhealthy behavioural options (e.g., substance use) to manage the negative emotions which seem to trigger the urge to self-harm.

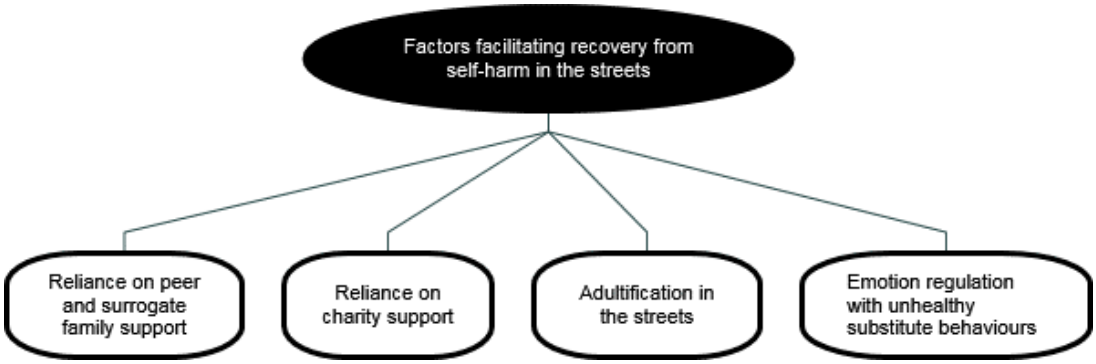

Figure 4.8. Factors facilitating recovery from self-harm in the streets.

4.3.3. Key themes from interviews with adult stakeholders

Generally, the participants' views and accounts were based on their experiences of previous encounters with adolescents who had self-harmed or were at risk of self-harm; one participant (F4) made additional inferences from her personal adolescent self-harm experience to support her views. To address the research questions guiding the interviews with the adult stakeholders, the main findings were organised around three major themes: "perceived prevalence of self-harm in adolescents", "characterising and accounting for self-harm in adolescents", and "responding to adolescent self-harm".

4.3.3.1. Major theme 1: Perceived prevalence of self-harm in adolescents

This major theme is related to the adult stakeholders' perceptions of how common the phenomenon of adolescent self-harm is in Ghana. At the introductory phase of each interview, I asked about the participant's awareness of the extent of the phenomenon of adolescent self-harm in Ghana generally, and more specifically within the participant's institution (i.e., among students in second cycle schools or street-connected young people attending charity facility) or family (i.e., adolescent children, in the case of parents). There was a general agreement that self-harm among adolescents is a recent phenomenon in Ghana, and often the behaviour is hidden. However, the participants had differing views as to the exact extent of the phenomenon at their places of work (i.e., school or charity facility) and the potential factors that could account for the differences in the rates of the phenomenon between in-school and street-connected adolescents in Ghana. Four subthemes emerged to describe the adult stakeholders' perceptions of the prevalence of adolescent self-harm in Ghana: "adolescent self-harm as a hidden behaviour", "rhetorical distancing", "downplaying the extent of adolescent self-harm" and "self-harm rates are lower among street-connected adolescents".

4.3.3.1.1. "If the adolescent dies, then we hear of suicide": Adolescent self-harm as a hidden behaviour

Generally, all the adult stakeholders agree that adolescents who self-harm often hide the behaviour, and recent media reports are showing frequent cases of adolescent suicide in Ghana. For example, two participants gave the responses below:

> I think [that] in Ghana, self-harm among adolescents is not that common, [um], it's only in recent times that we frequently hear about it, especially in the news, but before this year [2017], I think, we didn't hear much of children or adolescents involved in self-harm or even suicide. We're hearing more news about suicidal cases, especially among, [um], students. It means self-harm among young people is now more common than we know […] (F4, female, teacher).

> […] the matter of self-harm, to me, the adolescent does it in secret. If the adolescent dies, then we hear of suicide. But the real self-harm behaviour is a secret thing that you don't really get to know about, unless you make a very close observation of the adolescent. Some cut themselves on the laps or belly, and you can't see [it] because the school uniform covers the cuts or burnt or whatever. So, unless they tell you or you see that their behaviour has changed […] (M2, male, GES representative).

The views of F4 and M2 differentiate self-harm as a behaviour from suicide as death; whereas self-harm is hidden, death by suicide (possibly following self-harm)

becomes public knowledge usually through local media reports. At the time of the interviews with the stakeholders for this study, at least, 15 cases of adolescent suicides had been reported in the local media, between January 2017 and April 2018 (e.g., Adu & Awuah Jnr., 2017; Daily Graphic, 2017; Dailyguide Africa, 2017; Frimpong, 2017; Kubi, 2017; Myjoyonline.com, 2018). Typically, these media reports note that, prior to the suicide, the victim showed no sign of emotional problems or unusual behavioural changes (e.g., Quarshie et al., 2018). Perhaps, this way of reporting self-harm and suicidal behaviours in the local media could partly be informing the widely held view by the adult stakeholders in the present study that adolescent self-harm is a hidden behaviour; adolescents who self-harm are elusive.

4.3.3.1.2. "No child of mine has ever or will ever self-harm…": Rhetorical distancing

I asked specifically about the incidence of adolescent self-harm within the context in which the participants frequently interact with adolescents (i.e., school, charity facility, streets, or home/family). In response, however, the majority of the participants, particularly, the parents and school staff, provided descriptions that sought to idealise and project their school or home/family as being "free from" adolescent self-harm. They engaged in distancing themselves by rhetorically positioning themselves and their students (school staff) or adolescent children (parents) as not involved in self-harm. For example, a parent said:

> No child of mine has ever or will ever self-harm or even think of suicide. I say this with confidence because you see, as parents, we have to raise our children well. I'm a mother of three girls, um, my last born is 14 years. If I don't have [money], I tell them [about it]. When they were much younger, if there was anything they needed to know, I told them. I tell them that, 'if you go to school and you see your friend having something nice, it could be that their parents gave it to them or they have stolen it from somewhere. You have to be content with the little you have, and hopefully by the time you come back from school, I would have also gotten something for you' […] I'm closer to my children […] Their father also does the same thing. (F5, female, parent).

In the above quote, F5 engaged in rhetorically distancing herself and her daughters from self-harm by idealising her parenting style of being transparent, caring and understanding, and placing considerable emphasis on how "raising children well" serves to prevent them from self-harming behaviours and thoughts of suicide. She seemed to have limited the protective factors against adolescent self-harm to "good parenting". It is worth indicating that this parent (F5) opted for her first-born daughter, whom I had interviewed five days earlier, to sit in this interview.

Coincidentally and unknown to F5, her daughter had shared with me, in that earlier interview for this study at her school, her personal experience of self-harm. Her daughter (Phyllis, 18 years) recounted as follows:

> It [self-cutting] became almost like a habit, 'cos I cut myself, like, at least once or two times in, let me say, every term at school […] At home, my mom does not allow us to have friends or play with other people in the area, because if you are not careful you can become pregnant. So, all my friends are in school. But at school, someone can tease you while others are around. They'd tease you based on something on your body, like, something weird or funny […] They used to call me different names, like, 'cassava legs' 'cos my legs are long, and they would all laugh at me […] If you say something in class and you get it wrong or, like, a slip of tongue, as for that one you are doomed, it can become your name forever. You feel odd among your friends, like you are not intelligent, or you are not beautiful.

Phyllis's narrative sharply contrasted her mother's view that "no child of mine has ever or will ever self-harm". Also, Phyllis implied in her narrative that her mother controlled their social relationships in their neighbourhood, a view which contradicted the seeming non-authoritarian parenting style touted by her mother. It appears that the mother was unaware that her parenting style did not protect her daughter against self-harming. Perhaps, Phyllis's social relationships were limited to the school context only, a situation which seemed to have deprived her of the benefits of having alternative friendships within their neighbourhood. Thus, even though F5 may genuinely not be aware of any self-harm by her daughters, her confidence and attempt to project and idealise her family and parenting style amounts to rhetorical distancing, as she agrees that self-harm in adolescents is often hidden.

4.3.3.1.3. "In this school, self-harm is rare": Downplaying the extent of adolescent self-harm

Besides most school staff rhetorically distancing themselves and their adolescent students from self-harm and idealising their schools as safe environments for their adolescent students, they also downplayed the true extent of self-harm among the adolescents in their schools. They presented self-harm as a negligible phenomenon in their adolescent students. For example, a school staff member said:

> In this school, self-harm is rare. [Um], for example, if school is in full session, we have about 3,000 students in total. Now, within the whole academic year, you can have just one case of self-harm. So, it is not something that is frequent in this school; hardly will you hear about such things here, it's not common (F3, female, school counsellor).

Although participant F3 posited that self-harm was a reality in her school but at a negligible frequency, it is also interesting to note that the statistical evidence she

provided to support her view was in sharp contrast to the finding of the adolescent self-report survey of the present study in her school (Chapter 3). A total of 121 randomly selected students in her school participated in the self-report survey. Of this sample, 21 students reported that they had self-harmed during the previous 12 months, representing a prevalence estimate of 17.3%. The statistical evidence of the school-based self-report survey of the present study was helpful in identifying the tendency of the school staff who participated in this interview to downplay and underestimate the extent of adolescent self-harm in their schools. The survey evidence also corroborated the view that adolescent self-harm is often "hidden" from school staff; students who self-harm do not usually seek help from formal sources like school counsellors or school nurses. It is also possible that only severe cases of adolescent self-harm are reported to the counselling unit of the school where F3 works. But more interestingly, later in the interview with participant F3, I asked about the challenges she faces in providing support to students who self-harm in her school. In response, she said:

> […] Luckily, at our [counselling] unit, we are attached to the psychiatric hospital, so we are able to refer more severe cases to them [psychiatric hospital] […] If it's not for that arrangement, um, we would be overwhelmed, because every term, we get cases of students who self-harm in one way or another and for various reasons.

Earlier at the beginning of the same interview, F3 indicated that adolescent self-harm was rare in her school, as only one case was usually recorded within a "whole academic year". However, in this latter quote, she indicated that "…every term, we get cases of students who self-harm…" In Ghana, an "academic term" is roughly equivalent to three months, while an "academic year" comprises approximately nine months. Put together, the two assertions by F3, as was the case with the other school staff, plausibly pointed to an attempt by the participant to downplay the extent of self-harm among students in their school, thereby projecting their school as an ideal and safe environment for students.

The charity facility staff (i.e., social workers, and head of charity facility I interviewed) also acknowledged the topical nature of self-harm among adolescents in Ghana, but suggested that compared to in-school adolescents, self-harm might be less frequent among street-connected adolescents.

> […] In the general population of children and young people in this country, self-harm and suicide have become an issue of great concern. But in our work as social workers and NGOs concerned with children and youth living on the streets, we hardly see these behaviours. It doesn't mean [that] the children or families living on the streets of Accra are not experiencing self-harm; they experience it, but not as frequent as we hear [about it] in the

> media among young people in school or those who live in intact families (F2, female, head of charity facility).

A social worker who interacts with street-connected young people on a daily basis also shared a similar opinion but pointed out the hidden nature and the difficulty involved in identifying self-harm among street-connected young people in Accra. According to him,

> […] self-harm is not very frequent and not very clear or visible in the streets. You can see a boy or a girl who has unusual bruises or cuts on his/her hand, but he can tell you that he was attacked or beaten by someone, and because these young people are often exposed to these kinds of physical abuses in the streets, you won't doubt his story. […] Although I have heard that some young people in the street intentionally harm themselves …, I have not directly encountered one myself in the streets. But in the drop-in centre here, I have seen just a few (M1, male, street social worker).

The view of M1 provides an interesting explanation for the hidden nature of self-harm in the street context. The vulnerability of street-connected young people to the violence and harsh realities of the street blurs the detection of self-harm (especially, self-inflicted injuries) among street-connected young people. However, it appears misleading to accept the intimation by M1 that, the hidden nature of self-harm in the streets means that "self-harm is not very frequent" in the streets. It could be frequent, but the realities of street living may be making it difficult to detect. The female street social worker interviewed corroborated this dissenting view succinctly thus, "the thing is that, maybe self-harm is a serious issue on the street, but you know, we don't have enough basis to prove it, because sometimes these kids can use the situation on the street as a cover-up" (F1, female, street social worker).

Furthermore, the interviews with the charity facility staff and the street-connected adolescents revealed that charity facilities have rules that guide the conduct of young people who attend. Young people who disobey these rules are dismissed or barred from attending the facility. Additionally, self-harm is tabooed, and suicidal behaviours are criminalised in Ghana (the effect of this factor may not be considerable in the street context compared to the school, though). Therefore, the idea that street-connected adolescents who self-harm use the situation on the street as a cover-up might represent a conscious attempt by some of these young people to avoid being seen as breaking the rule or taboo. Thus, lying to cover up self-harm may seem unacceptable to the charity facility staff, but for the street-connected adolescents, perhaps, lying helps to avoid being stopped from attending the charity facility.

Generally, it appears that many instances of self-harm in adolescents are hidden and the stakeholders have no way of knowing the true extent of the

problem. Thus, the charity facility staff interviewed in this study appeared to present self-harm in street-connected adolescents as a real humanitarian problem in Accra. However, the parents and school staff interviewed downplayed the true extent of the phenomenon and engaged in rhetorically distancing their adolescent children and students from self-harm, thereby idealising their families and schools as safe environments for young people.

4.3.3.1.4. Self-harm rates are lower among street-connected adolescents

I sought to test out in the interviews with the adult stakeholders the statistical finding of the questionnaire survey (Chapter 3) that, compared to in-school adolescents, the prevalence estimate of self-harm was low among the street-connected adolescents, compared to in-school adolescents. I did this by sharing the finding with the adult stakeholders and asking for their opinions regarding potential factors (beyond plausible factors that might be related to the research design used) that could account for the significant difference in the prevalence estimates between the two groups of adolescents surveyed. Interestingly, even though some adult stakeholders responded by attempting to compare and contrast the life circumstances of the two adolescent groups, virtually, all the adult stakeholders tended towards emphasising factors that could potentially account for the low estimates among the street-connected adolescents, rather than potential explanatory factors for the high estimates among in-school adolescents.

Generally, the responses were pro-resilience themed; they suggested that street-connected young people's overarching orientation for survival on the streets makes them less likely to choose self-harm. This is illustrated as follows:

"What they think about is survival": Survivalist orientation. This theme is understood to mean that street-connected young people mainly focus on meeting their daily subsistence needs. Street-connected young people in Accra experience hunger, abuses and exploitation, diseases, and lack of stable shelter; they 'fight' on a daily basis for survival amidst these challenges (Asante, 2016; DSW et al., 2011; Heerde, Hemphill & Scholes-Balog, 2014; Markwei & Rasmussen, 2015; Mizen & Ofosu-Kusi, 2010; Orme & Seipel, 2007). According to the participants, street-connected young people strive on a daily basis to meet their basic needs of food, clothing, and sleeping place; their primary drive is to find self-support strategies and engage in activities to help them cope with their daily needs and adversities in order to survive. For instance, two participants captured this view as follows:

> […] On the streets, these young people wake up in the morning and all that matters to them is survival. What they think about is survival – they want food, they want shelter and other basic things of life. But I can imagine that the young people from homes, and I mean homes which are intact, they usually have all these basic things (M1, male, street social worker).

> On the streets, um, there is nothing like rights, unlike the home where a child learns at school that they have the right to food, shelter, education and all that from their parents. It doesn't happen on the streets. You have to struggle every day to survive, um, so where is the chance to even think of harming yourself? Of course, as humans, a street child may have their low moments when they are not happy, but I think street children are stronger (F4, female, teacher).

These views describe the daily challenge to survive that street-connected young people face and their motivation to pursue strategies to ensure they survive. The views seem to suggest that these daily struggles for survival make street-connected young people more resilient and less likely to choose self-harm, compared to young people who live in intact families.

Furthermore, the participants argued that this daily fight for survival by street-connected young people tends to make them develop certain pro-survival and resilience attributes: self-reliant and free spirited, and they have access to drugs.

Street-connected young people are self-reliant: In the street context, there are no parents or adult figures to provide guidance and the material needs of young people; street-based families are poor and often unavailable to provide meaningful parental supervision and emotional support to young people (Asante, 2016; DSW et al., 2011; Hatløy & Huser, 2005; Orme & Seipel, 2007). The implication is that, to survive, street-connected young people must be self-reliant to make decisions and provide for themselves support that ordinarily a parent figure must make or provide. According to the participants, street-connected young people take on these adult roles at a very young age, making them self-reliant and 'mature' early, and this possibly also partly account for the low rates of self-harm among this group of young people.

> You see, the street life makes them mature early. I'm saying this because what a 13-year old boy in the street can say and do, a 13-year old boy in school and at home cannot say or do. In the street, you need to be strong; you have to work, you have to manage your money, and you have to think about what you will eat tomorrow. So, these things make them develop a strong sense of being responsible for yourself every day. But generally, those at home [in-school adolescents] have parents or other relatives who provide for them, so at the least thing they may think [about] or want to self-harm (M1, male, street social worker).

In this quote, M1 seeks to imply that the overarching motivation to survive tends to make the growth and development of street-connected adolescents fast-paced, compared to in-school adolescents. Thus, the drive to survive leads to a strong sense of self-reliance and an early onset of "maturity" among street-connected adolescents, making self-harm cease or occur infrequently among this group of adolescents. In contrast, the coda to M1's view attributes the vulnerability of in-school adolescents to self-harm to their dependence on parents and adult relatives who provide for their daily needs.

Street-connected young people are free spirited: Here also, the participants argued that street-connected adolescents have low rates of self-harm because their motivation to survive on the streets makes them free spirited: they are independent and have unrestricted freedom and total control over their resources and social relationships.

> On the street, they [young people] have more time to do everything they want, they have friends who are like them and who understand them. They have freedom. They work to make money, they have the money. [um] So they're able to buy whatever they want, and they spend their time anyhow they want (M6, male, representative, Department of Social Welfare).

It appears from this view that street-connected adolescents do not face the challenges associated with lack of autonomy, rigid childhood comportment, and parental control and intrusions, which have been implicated for self-harm among in-school adolescents generally in African families (e.g., Beekrum et al., 2011; Meissner & Bantjes, 2017; Shilubane et al., 2012). The reflection of M6 seems to suggest that compared to in-school adolescents, street-connected adolescents are free spirited and have the protective advantage of the psychological benefits of autonomy, even if their autonomy is unguarded and they make ill-informed decisions.

Street-connected young people have access to drugs: According to the participants, to survive the various forms of distress on the streets, many street-connected young people tend to use drugs. Access to drugs in the street context is unfettered. The participants posited that whereas many in-school adolescents might choose self-harm to cope with their distress, many street-connected adolescents resort to other equally unhealthy behavioural options, mainly, alcohol and substance misuse as a coping strategy.

> […] children who are in school may choose self-harm when they are not happy, but on the streets, the street children choose drugs and other substances. Many of the children who come here [charity facility] have this problem. Um, for instance, now they buy tramadol and add it to energy drinks in high quantities and drink, others also smoke marijuana. They say

> that they do it because it makes them happy, or so that they can get more energy to work [in order] to make more money, and they're also doing it in order that they can sleep well. […] But the thing is that abusing these drugs over time can be harmful and even kill them (F1, female, head of charity facility).

F1 describes self-harm as a coping mechanism that is adopted by adolescents in response to distress. The quote suggests that self-harm among in-school adolescents involves instant, direct harm to self that is intended (e.g., self-cutting, self-poisoning). However, self-harm among many street-connected adolescents is not harm-intended and the harm to self is indirect and deferred, but potentially self-destructive (e.g., smoking marijuana, drinking beverages mixed with tramadol). In other words, self-harm (in the traditional sense of the term) fits more with what happens among many in-school adolescents, while street-connected adolescents resort to (often recreational) acts of indirect self-destructive behaviours without the intent to harm self.

Summary: The rate of self-harm is relatively lower among street-connected adolescents because they have an overarching orientation to survive the harsh circumstances of street living. The drive towards fighting for daily survival makes street-connected adolescents self-reliant, and free spirited; they use alcohol and drugs as a coping mechanism. The adult stakeholders argued that these pro-survival and resilience attributes make street-connected adolescents less likely to self-harm (frequently), compared to in-school adolescents. More interestingly, the reasoning of the adult stakeholders seems to underscore the importance of street-connected adolescents' sense of control and autonomy. The adult stakeholders seem to suggest that, even though there may be some restrictive norms in the street context, street living largely offers adolescents a greater sense of control over their life, and that appears to serve a protective function against self-harm.

4.3.3.2. Major theme 2: Characterising and accounting for self-harm in adolescents

This theme describes the adult stakeholders' views about the key circumstances that proximally lead up to self-harm in adolescents in Ghana, and how the adult stakeholders characterise and interpret self-harm in adolescents. The adult stakeholders reported that self-harm in adolescents occurs mainly due to acute negative emotions resulting from multiple negative events and difficulties: conflict with parents, child powerlessness in family, harsh parental control over adolescent relationships, family poverty, intra-familial sexual abuse, harsh punishment, family poverty, death of significant other adult, lack of social support, diabolical manipulations, bullying, accusations and social taunting, breakup, failure to meet

pressure to perform academically, low self-esteem, poor academic performance, and untreated mental health problems. For example, some participants stated as follows:

> […] some of these students are struggling emotionally to fit in and be accepted among their peers [...] Many adolescents are on social media and they get trolled and bullied. We see instances where students upload the naked pictures or videos of others […] Sometimes too, some girls are called 'ashawo'[35] or witches, not only by their peers, but by their family members. When I was growing up as a teenager, I was the only slim one in my family. I remember sometimes they would make fun of me – my siblings and even my parents, at one point or the other. It got to a time I was struggling to accept myself; yeah, I remember very well that my mom used to call me 'ghost'. And to be honest, there were few times I thought of committing suicide, yeah, it was a struggle (F4, female, teacher).

> Two years ago, we had a girl [in this school] who took overdose of Ibuprofen because her failure results were pasted [on the school's noticeboard] and her classmates and even her juniors got to know about it [...] So, I advised the headmistress against pasting the results of students on the noticeboard. If you put the results out there, mentally, you put needless pressure on the students, and it can be shameful and embarrassing for the less performing students. Three years ago, a student at the [mentions name of [36]] university committed suicide because his failure results were pasted on the noticeboard of the university. But I don't think the problem was the failure per se, rather I think the pressure and the shame and the embarrassment that came with the failure were what triggered the suicide (F3, female, school counsellor).

> […] some of the students work. After closing from school, they go to sell 'pure water'[37], food and drinks, and others are shopkeepers at home. These students work every day to generate income to support their families, yet some of them come to school with little or no money at all. As a teacher, you can see the child is hungry and so you'll give him money to buy food […] Most of them come from poor families with six or more children and a single parent, or even if both parents, they are not gainfully employed […] How can they provide the needs of the child? How can the child be happy? Many of these students are not enjoying their childhood, they are hopeless. So why won't they engage in self-harm or even commit suicide to end it all? (M4, male, teacher)

> […] The girl [my niece] combined different kinds of medicines [tablets] and drank. She wanted to commit suicide because her stepfather was sexually molesting her […] But whenever it happened, and she told her mother about it, she [her mother] didn't believe her […] At the hospital, she [my niece] told me everything, so I called the police and the man [stepfather] was arrested […] He is still in jail (M3, male, parent).

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[35] "Ashawo" is the local term in Ghana used to mean prostitute or having a promiscuous lifestyle.

[36] Name of university in Ghana anonymised for ethical reasons.

[37] In Ghana, "pure water" is the local term for filtered water in sachet. Although it is sold in stores, it is predominantly sold to commuters, passengers, and pedestrians by sellers who walk along the streets in traffic jams.

The reflections of the participants suggest that self-harm in adolescents in Ghana is often proximally proceeded by unpleasant negative emotional experiences engendered by multiple negative life events or difficulties occurring at the personal level, in family relationship, peer relationship, and/ or school environment. However, generally, it appears the identified multiple negative factors are more related to the family than are related to the school environment, peer relationships, or other social relationships outside the family circles. It is imperative though to point out that the difficulty with the reflections of the adult stakeholder participants – as can also be said of the adolescents' – is that, with regard to the first episode or onset of self-harm, they failed to account for the adolescents' rationale for choosing self-harm out of other possible behavioural options, even if such options are equally, potentially harmful (e.g., running away from home, where the adolescent is being abused by a significant other adult, reporting the abusive significant other adult to the police, seeking help, or using other negative coping strategies). Additionally, although some of the negative factors (e.g., low self-esteem) can potentially create feelings of self-dislike, it is not clear from the participants' reflective accounts the exact psychological factors which cue, particularly, the first episode of self-harm as a preferred behavioural option to the distressed adolescent.

Furthermore, the adult stakeholders characterised and interpreted self-harm in adolescents in several ways: "self-harm as a girl thing", "self-harm as a coping mechanism", "self-harm to have a voice", and "self-harm as a sensation-seeking behaviour".

4.3.3.2.1. "…girls brood and blame themselves…, boys fight back": Self-harm as a girl thing

In characterising self-harm in adolescents, many of the adult stakeholders reported that self-harm is gender patterned, often with more females, than males, engaging in the behaviour. They reflected that compared to adolescent boys, adolescent girls tend to have internalising tendencies, face multiple unmet needs, and experience various emotional challenges, which lead to increased likelihood of self-harm.

> […] most of the time, it is more girls than boys who do it [self-harm], but when it comes to harming another person then it is the boys who do that more. I don't mean to discount the fact that boys also engage in self-harm, they also do […] The thing is that, usually, most girls brood and blame themselves when bad stuff happen to them, they don't fight back, but boys fight back (F4, female, teacher).

> We see more girls harming themselves […] Well, by teenage, girls tend to have more needs than boys. Girls need more money to do many things, personal and school needs, you know. Girls' emotional needs also change

> dramatically, they have romantic issues and a whole lot. So, when these needs are not met, the girls feel more disappointed and neglected, unloved, or broken-hearted, which lead to self-harm (F3, female, school counsellor).

Among street-connected adolescents, the head of charity facility reported that:

> In the few cases [of self-harm] we've seen over the years, there have been more girls than boys. For instance, we had a 14-year old girl who attempted jumping from [the top of] our wall. She was lonely, she did not have any family, all efforts by our team to help trace her family were unsuccessful […] We've seen that the [street-connected] boys use drugs to feel better, but the [street-connected] girls rather self-harm (F2, female, head of charity facility).

The participants' reflection that self-harm is a frequent behaviour among girls than boys is consistent with the published literature in the area and the findings of the survey of the present research (Chapter 3). However, what remains unclear in the participants' reflection is possibility that this skewed gender pattern could be due to the fact that girls tend to report and seek help to address their self-harm more than boys. The ideals of courage, self-reliance, stoicism, and hardiness endorsed by hegemonic masculinity may prevent boys (and males in general) from seeking help and reporting their self-harm (e.g., Addis & Mahalik, 2003; Brown et al., 2019; Rice et al., 2018; Seidler et al., 2016; Vogel et al., 2011; Wong et al., 2017).

4.3.3.2.2. "To…forget about the pain in her heart for a while": Self-harm as a coping mechanism

Some participants characterised self-harm in adolescents as a strategy for managing negative emotions. They suggested that some adolescents self-harm in order to reduce the discomfort associated with emotional distress.

> In some cases, adolescents use self-harm as a way to forget about their pain […] When school resumed last term, a girl came to me with an issue […] Her boyfriend dumped her and she had a broken-heart […] She said that she sometimes felt like dead, and anytime she felt that way, she would use a divider to prick her thigh to keep her alert or to make her forget about the pain in her heart for a while […] They [adolescents] engage in self-harm because of immaturity, and they've not yet developed proper problem-solving skills, you see? (M4, male, teacher).

The concluding part of the view of M4 seems to indicate that perhaps even though adolescents may be responsible for their self-harm, their self-harm could also be blamed on the fact that, as adolescents (or young and immature people), their skills to rationally solve problems are not fully formed or may be absent. In other words, adolescents may be naturally more likely to choose self-harm, by virtue of their stage in the life course. What is however not clear from the reflections of M4 is why an adolescent would intentionally choose one 'pain' for another.

4.3.3.2.3. "He didn't like any of those impositions": Self-harm to have a voice

The school staff reflected that some adolescents use self-harm as means of having their voice heard and asserting their autonomy in their families. They argued that for adolescents who come from families where they are not allowed to participate in making decisions that affect them, self-harm or the threat of self-harm forces such families to make room to accommodate the views of the adolescents in the decision-making process.

> Most of these adolescents are coming from homes [where] they are suppressed and not allowed to take decisions even in little things that concern them. Two years ago, I had this student who attempted to stab himself at home. He said he was 'bundled' and brought to the boarding house. Also, his parents said he had to read medicine at the university to become a doctor in future, so he must do science here [in the senior high school]. He didn't like any of those impositions. So, you see, he attempted to stab himself in order to be heard by his parents (F3, female, school counsellor).

What is however not clear from the participants' reflections is whether some of these adolescents use self-harm one-time or repeatedly to maintain their voice and assert their autonomy in their families. Also, it is not clear what makes self-harm the 'best' behavioural choice among other alternative behaviours.

4.3.3.2.4. "…just to see how it feels": Self-harm as a sensation-seeking behaviour

The participants also characterised self-harm in adolescents as sensation-seeking. They argued that some adolescents learn to self-harm through watching self-harm scenes on television and seek ways to experiment it. For example, the school counsellor reflected as follows:

> […] we were discussing something in class, and she [a student] said that there is something that fascinates her. Whenever she's watching TV, and someone gets upset and they take plates and angrily crash it to the floor or the person kicks or punches a wall; she also feels like doing the same. She wants to do same just to see how it feels. And these days self-harm and suicide are shown in films, so in the same way, some adolescents who see these films would also want to try it out, when they have emotional problems (F3, female, school counsellor).

Perhaps, the reasoning of F3 seeks to suggest that the self-harm by some adolescents is an experimentation of what they observe others do on television scenes; the self-harm may not necessarily be a "rational" response to the adolescent's emotional distress. Again, what is not clear are the factors that cue the first episode or onset of self-harm during the state of acute emotional distress.

Summary: Generally, the adult stakeholders characterised self-harm as a behaviour often engaged in by female adolescents. They described self-harm in

adolescents as a coping mechanism used to manage emotional difficulties that are often triggered by interpersonal problems and family difficulties, particularly, challenges with parents.

4.3.3.3. Major theme 3: Responding to adolescent self-harm

This theme describes how the adult participants uncover and respond to self-harm in the adolescents they work with. The participants described specific strategies they use to identify adolescents experiencing distress, psychosocial and behavioural challenges in general; thus, the strategies are not targeted at discovering self-harm only. Regarding what the adult stakeholders do about self-harm after discovering the behaviour in their adolescents, all the participants described their need for training for increased competence and confidence to appropriately support adolescents who self-harm, although few of the participants talked about making referrals to mental health professionals. Given the topical nature of self-harm and suicide among in-school adolescents in Ghana, the school staff in this study underscored the need for a shift in the definition of the role of teachers to allow for the inclusion of social care for students. In all, four subthemes emerged to elucidate the major theme of how the adult stakeholders respond to adolescent self-harm: “uncovering self-harm in adolescents”, “suicide-intended and non-suicidal self-harm can be difficult to differentiate”, “feeling inadequate to offer support”, and “redefining teachers’ roles”.

4.3.3.3.1. Uncovering self-harm in adolescents

In both the schools and charity facilities, the participants indicated that most adolescents who self-harm do not normally voluntarily report or seek help from them (teachers, counsellors or social care professionals), and families hardly report cases of self-harm of their adolescent children to the school or charity facility. Thus, the next turn of the analysis sought to explore the descriptions of the adult stakeholders regarding the specific strategies they use to discover self-harm among adolescents in their schools or charity facilities.

4.3.3.3.1.1. Uncovering self-harm in the school

The school staff (i.e., teachers, counsellor, and school head) described three strategies they use to discover students who self-harm. The strategies are aimed at identifying distress or behaviours that could potentially trigger self-harm or to identify adolescents who had self-harmed recently or were experiencing a self-harm crisis. The school staff reported that they make use of these strategies concurrently

or in isolation: observation, giving out emotive composition exercises, and prelude guidance talks.

Observation: The school staff reported that they are able to uncover self-harm and self-harming tendencies among their students by closely watching and monitoring unusual changes in the behaviours of their students. That is, noticing subtle and significant changes, including truancy, which might be indicative of distress.

> Sometimes I do watch them [the students […] I remember there was this boy, fortunately, I was teaching that particular class that term, and I realised that in the classroom, he was unusually restless and a bit aggressive. Within the first five minutes he is sitting here, in the next two-three-four minutes he is moving to the other side. He moves here, moves there and sometimes he is not in the classroom at all. So, I invited him […] His problems were many, from family problems to school issues, and he actually had plans to commit suicide […] (M4, male, teacher).

Giving out emotive composition exercises: The teaching staff reported that they give out composition exercises on emotive titles to their students. In grading these assignments, the teachers indicated that they look out for themes related to distress and self-harm tendencies.

> I teach Social Studies and English language. So, what I do is that I give essay topics. And usually I'll give two or three topics for you [the students] to choose from. But when I'm suspecting something, maybe personal or peer problems or family related problems, I give a particular issue so that everybody would have to write on that […] I pick the essays that are revealing things; I pick those ones then I call the students individually to have a private discussion […] I remember in one instance, a boy wrote [that] 'I'm tired, I'm tired'. So, I invited him to tell me more about his 'tiredness', and he was actually thinking of suicide […] At least within the past 2 years, I have spotted three girls who wanted to kill themselves; one actually showed me several [self-inflicted] cuts on her thigh […] (F4, female, teacher).

According to the participants, the instruction guiding the composition is that the students must be experiential and avoid being fictional in their essays. The participants discussed some of the challenging instances of attempting to involve the families of some of the identified students who self-harm in order to provide support for the students.

Prelude guidance talks: The school staff reported that, as a prelude to teaching a lesson in class, they sometimes spend the first few minutes of the period to talk to the class about a topical psychosocial issue relevant to young people or they share with the class some of their (teacher's) own significant teenage life experiences. After the brief talk, the teacher invites brief comments and addresses questions from the class. The teacher picks signs of potential distress from the students'

reactions and responses during the brief question-and-answer session, and later invites each identified student for a private informal conversation.

> I'm a school counsellor and I also teach […] In this school, one of the things we do as teachers is that, sometimes, um, you try to share your life experiences with the class. This helps the adolescent to understand [that] what he's going through now, other people have been through it and other people are also going through, so it's a stage […] When they ask questions, you'll know something is not right or sometimes they come to you and say, 'madam, please I want to talk to you', then they'll tell you about their self-harm or even how they're thinking about it (F3, female, school counsellor).

The experiences shared by the school staff on how they discover self-harm among students indicate that the strategies of observation, giving out emotive composition exercises, and prelude guidance talks are targeted at discovering student distress and general psychosocial challenges that might be "hidden" or unresolved.

4.3.3.3.1.2. "…you have to try to monitor that child…": Uncovering self-harm in the charity facility

Interestingly, at the charity facilities, the participants reported that most street-connected adolescents often share their problems and challenges with the members of staff for help, but the adolescents who self-harm do not voluntarily seek help or where they do, they lie about the true cause of their injuries. Therefore, the staff tend to use unobtrusive monitoring as a strategy to help them identify self-harm in the adolescents. All the three staff members interviewed (i.e., two street social workers and one head of charity facility) shared views similar to the following:

> […] most of our children have marks and scars on their bodies. When you ask them [about it] they would say someone hit them or beat them up, or they would say they have the marks because they fought with someone. Personally, sometimes I doubt it, because I feel some of them intentionally hurt or cut themselves; because if you look at the part of the body where the wounds or marks are you'd wonder, 'would someone hit or cut you at this place; your belly, thigh, or abdomen? How?' So over here [at the charity facility], whenever you doubt, you have to try to monitor that child to see if there are some changes in their behaviour. (F2, female, head of charity facility).

4.3.3.3.2. "…, but what you have done can kill you": Suicide-intended and non-suicidal self-harm can be difficult to differentiate

Saliency analysis (Buetow, 2010) of the transcripts showed that, of all the adult stakeholders interviewed, it was only the school counsellor who reflected on the difficulty involved in differentiating between self-harm that is suicide-intended and self-harm that is not. In her line of work as a school counsellor, she performs basic psychological assessment of cases to, among other things, inform choice of counselling approach and referral decisions. According to her, where suicide is intended, and a severe method of self-harm is involved, the adolescent is referred

to a psychiatric hospital; she handles cases of “non-suicidal” self-harm involving less severe self-harm methods at the school level, with support from the adolescent’s family. She emphasised, however, that her effort to differentiate between suicide-intended and non-suicidal self-harm is made difficult particularly in cases where the student reports a non-suicidal intention but has used a potentially lethal self-harm method, or where suicide is intended but a relatively non-lethal or less severe self-harm method has been used. She indicated that she had fears about the latter, as she believes that, if let go, the student may end up ‘trying out’ more severe self-harm methods in the future, which could lead to death.

> To be honest, cases of self-harm can be difficult to handle. Sometimes, it can be difficult trying to figure out if the student really wants to die or not […] They would say, ‘madam, I don’t want to die’. But what you have done can kill you [...] Others would say that they want to die and leave this world, but then they have not really hurt themselves that badly, maybe just a small cut on the hand or maybe they took say 3 or 4 paracetamol tablets […] You can’t tell whether it’s a childish prank to get some attention or they are not sure of what they expect to happen. (F3, female, school counsellor).

Generally, F3 acknowledges the complex nature of managing adolescent harm in a care-giving context. It is possible that the students who report, “I don’t want to die”, might be doing so to avoid being referred to the psychiatric hospital, whereas those who report that, “they want to die and leave this world”, might be doing so to be referred to the psychiatric hospital in order to escape for a while unpleasant circumstances at school or at home. Beyond these possibilities, the school counsellor’s reflection seems to suggest that she has a binary (present or absent) approach to assessing suicide intention, undergirded by an assumption of a positive linear relationship between intention and method. Plausibly, she assumes that where suicide is intended, method of self-harm must be lethal; where a non-suicidal intention is reported, self-harm method must be less severe. It also appears from her reflection that adolescent self-harm is not informed by multiple motives (i.e., having both suicidal and non-suicidal intentions simultaneously). Thus, she seems to have difficulties where suicidal and non-suicidal intentions co-exist, and where such multiple motives are reported in the same self-harm case. The school counsellor’s reflection may be pointing to the idea that self-harm intentions could be fluid, oscillating between suicidal and non-suicidal intents. However, as pointed out in the final sentence of the excerpt, perhaps, some adolescents may not be fully aware of the potential dangerous outcomes of their self-harm. She also seemed to hold the problematic belief that adolescent self-harm could be a “childish prank to get some attention”. These difficulties shared by F3 could be underscoring the need for the provision of literacy and evidence-based training on adolescent self-harm to

school staff, as they occupy a frontline position in providing mental health support to students.

4.3.3.3.3. "You don't even know of any first aid…": Feeling inadequate to offer support

This sub-theme describes what the adult stakeholders do about self-harm after discovering the behaviour in their adolescents. In all, only the head of charity facility and the school counsellor indicated that they made referrals to mental health professionals. According to the head of charity facility (F2), "we have a volunteer clinical psychologist who comes here twice a week, and we refer all mental health cases, including self-harm, to her". However, the school counsellor (F3) said, "We [at the school counselling unit], first of all, calm and re-assure the student, and take them through some counselling sessions […], we are attached to the psychiatric hospital, so we are able to refer more severe cases to them [psychiatric hospital] …" Thus, while the charity facility refers all cases of adolescent self-harm to a mental health professional, the school counsellors refer only severe cases of self-harm for professional mental health attention.

At the individual level, all the adult participants reported that they did not have the right knowledge and lacked any professional training to enable them to provide meaningful support to adolescents who self-harm. They felt inadequate and ill-equipped to support adolescent who self-harm. Some school staff shared their experiences as follows:

> Most times, I feel very limited. All I do is to listen to them [adolescents] and say one or two common sense things or maybe pray with them. But deep down within me I feel this is not enough, this is not professional; what if what I just said is rather going to worsen the self-harm situation? It's really frustrating, not having the right information and skills to help a young girl who walks up to you [a teacher] for help so she wouldn't harm herself (F4, female, teacher).

> […] there are no guidelines telling you what steps to follow. So, all you can do is to take the student to the headmaster or assistant headmistress, but what if these bosses are not available? The other thing is that, sometimes the issue worrying the student is so confidential and they trust you not to tell anybody, but here is the case you [as a teacher] also don't know what to do; you don't even know of any first aid to give the student (M4, male, teacher).

This experience of being unable to provide early support to adolescents upon detection of self-harm was common among the participants. Perhaps, the low level of adolescent mental health literacy and the lack of competence and confidence in supporting adolescents who self-harm reported by the school staff and social workers in this study is understandable for one key reason. That is, generally, the

professional training of teachers and social workers tend to lack depth in child and adolescent mental health issues (Gilbert & Dako-Gyeke, 2018; Leschied et al., 2018; Shelemy et al., 2019; Whitley et al., 2018). For example, recent evidence suggests that besides the stigmatised nature of mental health issues, social work students in Ghana tend to show low levels of interest in pursuing career paths related to mental healthcare (Gilbert & Dako-Gyeke, 2018).

Furthermore, the views by F4 and M4 above give a sense that teachers occupy a front-line position for both the identification of self-harm in adolescents and as the first point of contact for support by adolescents who self-harm. However, as described by M4, the lack of an institutional protocol to guide the handling of adolescent self-harm seems to worsen individual teachers' sense of incompetence and lack of confidence in offering support to adolescents who self-harm. This view was also shared by the head of charity facility, that although there are policy documents providing guidelines for the work of charities, these documents generally lack specificity in terms of the mental health issues affecting the children and young people they work with.

> You'd usually read a general thing like, "ensure that the children are psychologically and mentally well". I mean, this is very vague, because there is nothing about what specific actions to take to ensure that these young people are mentally and psychologically well […] I know schools also don't have anything on student mental health. So, we need something more concrete from the Department of Social Welfare (F2, female, head of charity facility).

The section, "Adolescent self-harm prevention in Ghana", in the Discussion section of this Chapter describes, among other preventive strategies, some of the training needs identified by the adult stakeholders to increase their competence and confidence in identifying and providing early support to adolescents who (are at risk of) self-harm.

4.3.3.3.4. "We have to be both teachers and parents…": Redefining teachers' roles

The school staff agreed that self-harm and suicide in students have become topical issues of concern in Ghana. They acknowledged that given the central position teachers occupy in the daily life of young people who attend school, teachers have a critical role to play in responding to adolescent self-harm. They argued thus that, in order to make teachers' contributions more meaningful in responding to adolescent self-harm, perhaps a shift in the traditional definition of teachers' work might be needed. They suggested that the restriction of teachers' role to academic

progress and success of students might require a change to allow teachers to also provide social care for the students they teach.

> […] most teachers are parents too, but when we [teachers] come to school we tend to focus only on classroom progress and success in exams. I think this has to change, we have to combine both. We have to be both teachers and parents when we are in school, because these students need us to support them emotionally too […] They face too many challenges beyond the routine school work of reading, writing and arithmetic […] (F4, female, teacher).

> It's sad to hear in the news these days that students engage in suicide or deliberately hurt themselves, but I think it's a wake-up call for us as teachers. It means that, now we cannot be teachers only, but also be mothers and fathers to the children we teach […] The system is designed to concentrate mostly on the cognitive and the psychomotor areas and neglect the affective domain of education. Meanwhile, the affective [domain] is the heart of everything […] I believe that the school should be a haven for students who have emotional problems (M5, male, head of school).

The two reflections above acknowledge that students face other challenges, beyond their daily tasks of school work. Both school staff members recommended that, besides their traditional role of teaching and providing academic guidance, teachers should also act as parents providing emotional support to the students they teach. Indeed, recent emerging evidence suggests that creating a pro-mental health school environment is beneficial for the well-being of both students and school staff (e.g., Deb, 2018; Leschied et al., 2018; Littlecott et al., 2018; Mælan et al., 2018, 2019). Given that the adolescents and school staff in this study identified many of the challenges faced by adolescents as those related to parent-child relationship, the suggestion to include social care as part of teachers' roles seems to be in order. However, the critical view of the present study is that, inferring from the reflections of F4 and M5 above, the school staff endorsing this suggestion seem not to have considered the point at which their traditional role as teachers ends and at which point the suggested role as parents/social caregivers starts in the classroom, and under which specific circumstances of the teacher-student relationship and interactions. It is important to consider how these two key roles can be integrated in a balanced way so as to avoid potential role conflicts not only within the individual staff (teacher/parent) but also conflict with the way the adolescents may still be receiving parenting from one or more of their own parents.

Summary: Generally, the adult stakeholders appear to characterise self-harm among adolescents in terms devoid of victim blaming and individualising self-harm; they showed empathic and supportive attitudes towards adolescents who (are at risk of) self-harm. They appear to make active efforts at discovering self-harm (and other unresolved emotional difficulties) in their adolescents by adopting various pro-active strategies. Perhaps, as natural advocates of the well-being of

children and young people, these empathic and supportive attitudes of the key adult stakeholders (particularly, the school and charity facility staff) in this study should be expected. However, in providing early support to adolescents who (are at risk of) self-harm, the stakeholders expressed a lack of competence and confidence mainly because they have no professional training and education on self-harm in young people. Figure 4.9 below provides a graphical summary of the key themes and subthemes from the interviews with the adult stakeholders in this study.

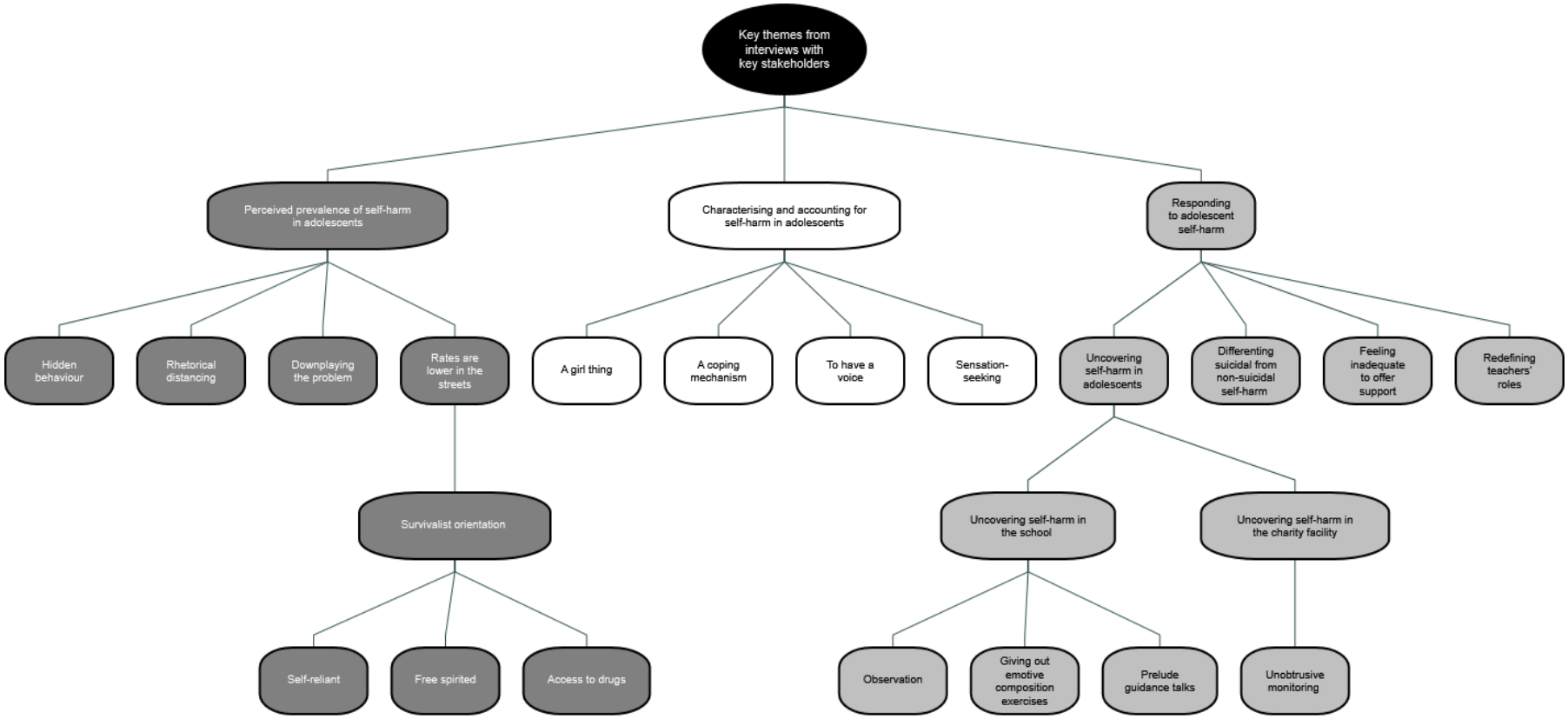

Figure 4.9. Key themes and subthemes from interviews with adult stakeholders

4.3.4. Adolescent self-harm prevention in Ghana

This covers the suggestions of the participants (both adolescents and adult stakeholders) regarding how self-harm in adolescents can be prevented in Ghana. The suggestions were drawn from two sources within this thesis: 1) the adolescents' responses to the open-ended question on self-harm prevention included in the questionnaire survey (see Chapter 3, Appendix 3.1, Question 66), and 2) the adolescents' and stakeholders' responses to the one-to-one interview question on how adolescent self-harm can be prevented in Ghana (see Chapter 4, Appendix 4.4 – 4.7). Specifically, the question sought to find out the participants' suggestions regarding what kind of help can be offered to adolescents who self-harm, in order to stop or recover from the behaviour, and what can be done to prevent (non-self-harming) adolescents from self-harm altogether. The question was asked with specific reference to the roles that certain key stakeholders can play in the prevention process: the individual adolescent, families, schools, peers, religious groups, charity facilities, and government. It must be noted that the same question was asked in both the survey and interview study. However, whereas 71.3% of the in-school adolescents responded fully to the question in the survey, only 27.6% of the street-connected adolescents were available or chose to respond to the question, as most of them had to end the survey mainly due to work time constraints or fatigue (Chapter 3). These responses were provided by both the adolescents who reported lifetime self-harm and those who did not report any lifetime self-harm. The suggestions of both groups of adolescents were included in this section, as many adolescents would have known neighbours, family members or peers who have self-harmed or even died by suicide; knowledge or exposure to the self-harm of significant others has been found to be associated with increased risk of self-harm (e.g., Mars et al., 2019; Goldman-Mellor et al., 2019; Knorr et al., 2019).

In the interview study, all the participants agreed that self-harm in adolescents in Ghana could and should be prevented, as the behaviour threatens the life and future of young people and affects their families and others around them. Some of the interesting suggestions for adolescent self-harm prevention made by the adolescent participants were tested out among the relevant stakeholder participants; likewise, those interesting suggestions made by the stakeholder participants were tested out among the related adolescent participants. The mixed sequential approach followed for the interviews with the adolescents and stakeholders made possible this testing out of the suggestions (see Figure 4.4). For

example, in the initial batch of interviews with the adolescents, Nadia (female, 18 years), an in-school participant suggested that,

> Friends don't help, they will rather broadcast it [your self-harm] like BBC,[38] and they do it within seconds. So, like, just look for someone who is mature, maybe a teacher you trust, who can listen to you; not necessarily someone who will advise you, but somebody who will listen. As for friends, [it is] hell no! I know it, it happened to me.

I noted this suggestion by Nadia and tested it out in the subsequent batches of interviews with the adolescents and adult stakeholders. Although all the adult stakeholders and many adolescents agreed with the suggestion, some adolescents partly disagreed as shown in the example as follows:

> [um], sometimes teachers and other older people tell us not to share our problems with our friends because friends are not good, or friends can't help us. But I disagree, it's not always true. I remember one time, a friend of mine, after I told her [about my self-cutting], anytime she realised I was in that situation, like, very moody, she stopped me. She was very vigilant around me and very helpful […] She said [that] she also used to take medicines [overdose]… But then when I told another friend [about my self-cutting], he called me a psycho […] (Joan, female, 17 years).

Despite the disagreement as to the age of the person (young or old) to talk to, both the adolescent and adult participants agreed that adolescents experiencing emotional challenges (including self-harm crisis) should seek help by talking to someone trustworthy. A common feature of the reflections of the participants, particularly the adolescents was that, in most instances, they seemed to have based their suggestions on their personal experiences, rather than on conjecture.

In another interesting instance, an adolescent and a teacher, separately, suggested that the Ghana Education Service (GES) should consider including specific topics related to child and adolescent mental health in the school curriculum (e.g., self-harm, self-regulation, problem-solving skills). The teacher's suggestion was that:

> Many schools don't even have counsellors, some [schools] fall on chaplains, yet the student numbers increase every year […] So, I think, periodically, GES must organise conferences, seminars and short in-service training for us [teachers] on the mental health matters of students, because at the [teacher] training college, there is nothing specifically on adolescent mental health, let alone adolescent self-harm or the suicides we're now witnessing. GES must also put specific topics in the syllabus so that we can teach the students, for example, something like emotion management or life skills and other things. If that happens, the syllabus at the teacher training colleges must also [be] revised to accommodate these changes, so that teachers who come out [of training college] will have the knowledge and skills to help our students […] (M4, teacher, male).

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[38] BBC – The British Broadcasting Corporation

Again, I noted this suggestion and tested it out with the parents, the other school staff, and the Greater Accra regional GES representative. The parents and all the other school staff (i.e., teacher, school counsellor, and head of school) agreed with the suggestion; however, although the regional GES representative concurred with the suggestion, his response did not reflect a strong sense of institutional commitment towards potential adoption of the suggested changes anytime soon. As shown below, he intimated that the adoption of the suggestion by the GES would be challenging.

> The suggestions are in order, I think I subscribe to that, because, whether we like it or not, emotional and mental health issues affecting our children and students have become important these days, and we hear in the media of students committing suicide. I believe there are some general lessons already in the syllabus which touch on some of these issues, but they are not very detailed or specific. But given the exigencies and the realities around us now, I think we'd have to take a second look at the syllabus in our schools and also [in] our training colleges and universities of education… But, you see, the challenge is that at GES, we implement policies; the Ministry of Education makes the policies for us and we implement. So, to make this kind of significant changes, it must be a collective thing – parents, teachers, the Ministry [of Education], GES, and the general society must accept that this is the way to go, else we cannot make any headway (M2, GES Representative, male).

Similarly, the head of charity facility interviewed indicated that

> […] there are some policy documents and guidelines, for example, the Children's Act, the Home Management Standards, and a few others which guide what we [charities] do, but specifically on the mental health of street children and young people, no. There is nothing concrete. As far as I know, there is only something on child health, which is mainly medical issue, but not mental health. You'd usually read a general thing like, 'ensure that the children are psychologically and mentally well'. I mean, this is very vague, because there is nothing about what specific actions to take to ensure that these young people are mentally and psychologically well […] I know schools also don't have anything on student mental health. So, we need something more concrete from the Department of Social Welfare (F2, female, head of charity facility).

In the interview with the Department of Social Welfare (DSW) representative, I mentioned this suggestion for his opinion. The DSW representative supported the suggestion and acknowledged the need for a child-and-adolescent mental health policy.

> The truth is that, there is nothing! At the moment, I am working on a policy document for the aged … However, for our kids, really, we never thought about that, the mental health aspect. I think it's an oversight on our part. But generally, when you look at the whole system, mental health is less priortised. The other issue is that the Mental Health Act seems to pay more attention to hospital care, rather than community-based care. Can't we find a way to train people to provide something like first aid mental healthcare

> within the community and then refer the serious issues to the hospitals? (M6, male, Department of Social Welfare Representative).

Regardless of the instances of disagreements which emerged from testing out some of the suggestions among the participant groups, the responses drawn from both the survey and the interviews were included in the evidence discussed in Chapter 5 (Section 5.8.2). Generally, the participants' suggestions for the prevention of self-harm in adolescents in Ghana were mostly related to universal prevention, stakeholder early intervention efforts, and individual level behavioural change efforts; the participants' suggestions included legitimate targets for action and specific suggestions for interventions. To provide a pragmatic appreciation of the various responses, the participants' specific suggestions were integrated and discussed vis-à-vis the empirical evidence of this thesis (see Chapter 5, Section 5.8.2).

4.4. Discussion

This study represents the first research effort from Ghana at exploring qualitatively first-person accounts of the lived experiences of adolescents and the views of some key adult stakeholders regarding self-harm in adolescents. Generally, this study provides a window into how non-clinical populations of in-school and street-connected adolescents with a history of self-harm in Ghana describe the circumstances leading up to their self-harm, their motives for engaging in the behaviour and how they make sense of their own self-harm. Similarly, the inclusion of key adult stakeholders in this study helps to explore how relevant adult and institutional stakeholders perceive and respond to self-harm in adolescents in the country. Besides providing distinct qualitative evidence to understanding adolescent self-harm in Ghana, the evidence of the present study provides further elaborations on some of the key findings of the survey section of this thesis (Chapter 3) as discussed below.

4.4.1. Summary of key findings

The present qualitative study sought to explore, through one-to-one interviews, in-school and street-connected adolescents' lived experiences of self-harm and the views of some key adult stakeholders about adolescent self-harm in Ghana. Thematic analysis showed that, generally, both the adolescent and adult stakeholder participants' accounts of the motives and primary circumstances leading up to the onset and repetition of self-harm in adolescents were elaborated more along the lines of social interactions with others, moral standards, and familial

relationships, with little emphasis on individual level experiences (e.g., emotional states and thoughts). The adult stakeholders downplayed and rhetorically distanced themselves and their adolescents from self-harm, although they agreed that self-harm in adolescents is generally a hidden behaviour, and presently represents an issue of public concern in Ghana.

Interestingly, both the adolescent and adult stakeholder participants failed in their reflections to specifically account for adolescents' rationale for choosing self-harm as a better option out of other possible behavioural options, even if such other behavioural options would be equally, potentially harmful. In specific terms, the participants in this study seemed to describe the circumstances related to the onset of first episode of to self-harm, rather than the choice of the act.

Also, the adolescents reported both intrapersonal and interpersonal motives for their self-harm, but they mostly externalised the agency or responsibility for their self-harm to circumstances and forces beyond their control. They mostly absolved themselves of any personal responsibility for their self-harm. Generally, the self-harming behaviours of the adolescents were indicative of relational acts that could be interpreted in communicative terms as "cry for help or control", "protest against harsh punishment and abuse", "assertion of innocence", and "appeal".

Overall, although the adolescent participants viewed self-harm as personally helpful in bringing release from emotional distress, they mostly evaluated their self-harm as socio-culturally undesirable and injurious to significant others; an evaluation that seemed to have motivated their non-repetition of the behaviour. They also relied on formal and informal support to stop or recover from self-harm. In street-connected adolescents, their overarching orientation for survival and sense of autonomy were implicated as key protective factors against self-harm.

Generally, the adult stakeholders showed supportive attitudes towards adolescents who (were at risk of) self-harm. However, they felt inadequate and expressed a lack of competence and confidence in offering early support to adolescents who (were at risk of) self-harm; differentiation between suicidal and non-suicidal self-harm was particularly identified as a complex task. Thus, the school staff identified their need for training, school mental health promotion protocols and curricula changes.

Finally, the participants' suggestions for the prevention of self-harm in adolescents in Ghana were mostly related to universal prevention and stakeholder early intervention efforts.

4.4.2. Prevalence of self-harm in adolescents

The survey component of the present research (Chapter 3) shows that self-harm is common in adolescents in the Greater Accra region of Ghana: overall, one in five adolescents has ever self-harmed (representing one out of five in-school adolescents, and one in eight street-connected adolescents). The findings of this interview study suggest that key adult stakeholders are aware of the phenomenon of self-harm in adolescents in Ghana. They acknowledged that self-harm in adolescents is presently a matter of public concern in the country, although they also downplayed the extent of the problem and rhetorically distanced themselves from the phenomenon.

Given the highly stigmatised nature of self-harm and suicidal behaviours in Ghana, the posture of rhetorical distancing adopted by the adult stakeholders in the present study plausibly represents an effort to socially prevent themselves, together with their institutions, families, and adolescents from being stigmatised. Within the sub-Saharan African context this finding is not particularly surprising, as previous studies, for example, from Uganda, have shown that family and community members tend to adopt distancing as a symbolic cleansing ritual and a social practice of escaping social stigma related to suicidal behaviours (Mugisha et al., 2011); in a research context, parents adopt rhetorical distancing to insulate their adolescent children from common youth risky behaviours (e.g., alcohol and substance use, sexual promiscuity) which are socially unacceptable and stigmatised (Bernays et al., 2018). Evidence from a recent systematic review and meta-ethnography of qualitative research on the role of schools in children and young people's self-harm and suicide shows that, in the debate and discussion of the prevalence of adolescent self-harm, some school staff tend to place adolescents who self-harm into "other" category, while at the same time distancing themselves from this "other" category of adolescents; some school staff acknowledge the problem of self-harm in students, but usually view it as existing in other schools, among other students (Evans & Hurrell, 2016).

The posture of rhetorical distancing by key adult stakeholders can have implications for research on adolescent self-harm. Rhetorical distancing can lead to invalid and unreliable (e.g., underestimation of) research data, as participants may seek to provide guarded and socially desirable responses to project their families, communities or schools as "safe environments" for young people, to the detriment of quality data required to inform intervention and prevention efforts. Also, this notion of "othering" and posture of distancing can decrease the opportunities for the

detection of adolescent self-harm and prioritisation of intervention and prevention efforts (Evans & Hurrell, 2016).

Nonetheless, drawing on their experiences with adolescents who self-harm, the adult stakeholders in the present study provide interesting explanations for the difference in the prevalence estimates of self-harm between the adolescent groups involved in this research. The adult stakeholders suggest that the low rates of self-harm in the street-connected adolescents (compared to in-school adolescents) could partly be a reflection of the difficulty involved in obtaining reliable estimates of self-harm among street-connected adolescents, even if the desired sample of this population is accessed. The harsh circumstances of street living (e.g., physical fighting and attacks) blur the reliability of self-reports. Thus, the statistical results of the present research (Chapter 3) cannot be interpreted to mean that street living is protective against adolescent self-harm or that street-connected adolescents have "healthy" resilience. These observations imply that the prevalence estimates of the survey of street-connected adolescents (Chapter 3) must be interpreted with caution, taking into consideration these practical challenges.

Another related finding is that the adolescent and adult stakeholder participants in this study failed to address the question "what would make an adolescent choose self-harm and not another behaviour?" In response, the participants described various factors and circumstances: social contagion or media exposure to the self-harm of others, opportunistic exposure to means of self-harm, and impulsivity. However, in terms of time proximity, these factors do not appear to be saliently responsible for psychologically cuing the first episode of self-harm. A possible explanation for this imprecise response could be three pronged: epidemiological changes, research design, and complexity of self-harm. Across the world, there might be some on-going significant epidemiological changes in the issues affecting the mental health of children and adolescents. For example, about 16 years ago, Welsh (cited in Whitlock, 2010, p. 1) projected that, given the increasing presence of self-harm in popular and traditional media, plus the increasing number of clinical reports on the phenomenon, self-harm in adolescents is likely to be "the next teen disorder". In the present study, more than half (54.3%) of the adolescent participants (in-school = 87.5%; street-connected = 33.3%) reported that, prior to the first episode of their own self-harm, they had seen self-harm content on television; nearly half (47.8%) of the adolescents (in-school = 54.2%; street-connected = 75%) indicated that prior to their own self-harm, they knew someone who had self-harmed or died by suicide in their family, community, school or among their friends.

More recently, Baranne and Falissard (2018) observed in the analysis of the Global Burden of Disease data a considerable switch from infectious and acute health problems to chronic and mental health conditions in young people. Based on the significance of this new growing trend, the authors have projected that “mental health problems in youth are likely to become one of the main public health challenges of the twenty-first century” (Baranne & Falissard, 2018, p. 1). Evidence from recent global and regional systematic reviews (including the sub-regional systematic review of the present research – Chapter 2) and meta-analyses of available studies on self-harm in adolescents are further corroborative evidence for these projections (e.g., Aggarwal et al., 2017; Cipriano et al., 2017; Muehlenkamp et al., 2012; Swannell et al., 2014; Valencia-Agudo et al., 2018). Thus, in the present research, perhaps, the initial or first episode of self-harm in the adolescents might have been influenced by the recent global popularity of the behaviour, through media contagion, modelling or social learning (Ayers et al., 2017; Brown et al., 2018a; Lewis et al., 2011; Niederkrotenthaler et al., 2019; Purington & Whitlock, 2010).

Secondly, it is possible that the research design used for this research did not readily allow for obtaining precise and reliable responses to the question of interest. Firstly, in the cross-sectional survey, the qualitative nature of the question was incompatible with the format of the questionnaire used (Chapter 3). In the present interview study, perhaps either the participants did not quite understand the question as posed by the interviewer or the interviewer asked the question in the wrong way thereby eliciting unclear and non-salient participant responses. It is also possible that the participants did not genuinely know or have a precise response, or perhaps they did not want to share their reasons for this research (Blanchard & Farber, 2018). Future interview studies may consider constructing the question more precisely; pretesting of the interview questions in a pilot study to inform appropriate modification is strongly recommended.

Finally, and more importantly, this finding could be consistent with evidence from some recent studies from high-income contexts (e.g., Klineberg, Kelly, Stansfeld & Bhui, 2013) that, self-harm can be a complex experience and the motivation related to the behaviour can be difficult for adolescents to talk about in simple articulate terms.

4.4.3. Attributions, motives and meaning-making of self-harm in adolescents

The adult stakeholders perceived self-harm in adolescents as generally hidden or a secret behaviour, the adolescents self-harmed to manage negative emotions. At the outset, the adult stakeholders' view that self-harm is a hidden behaviour in adolescents was not expected, although the view signals that the adult stakeholders are aware that adolescents often carry out self-harm in secret or out of the sight of others (Chandler, 2018). The view that self-harm in adolescent is a hidden behaviour counters the dominant misconception that adolescent self-harm is an attention-seeking or manipulative behaviour (House, 2019; Caicedo & Whitlock, 2009; Walsh, 2006). Indeed, throughout the interviews, both the adolescents and adult stakeholders reflected that where the self-harm came across as attention-seeking, the adolescents openly self-harmed because they clearly needed the attention (e.g., for their voice to be recognised in family decisions that affect them). However, in most of the cases reported by the adolescent participants, the adolescents self-harmed out of the sight of others at home, although some of the cases were discovered through hospitalisation. Evidence suggests that there is little empirical basis supporting the commonly held view that self-harm in adolescents is attention-seeking, as this motive is not widely reported by adolescents themselves; it is a perception that is often attributed by others (House, 2019; Chandler, 2016, 2018; Doyle et al., 2017; Saunders et al., 2012; Scoliers et al., 2009).

Notably, however, the 'out-of-sight' nature of self-harm in adolescents could imply that the prevalence of the behaviour is underestimated (Best, 2006). This presupposes further that the allocation of resources and the designing and implementation of intervention and prevention efforts would be prioritised only when self-harm in adolescents becomes 'visible' (Simm, Roen & Daiches, 2010).

The evidence of the present study also indicates that both the adolescent and adult stakeholder participants attribute self-harm in adolescents mostly to factors beyond the personal characteristics of the individual adolescent: familial relationships, moral standards, and social interactions with others. In this vein, some of the adolescents deny any personal agency or responsibility for their self-harm. While a few of the adolescent participants seem to self-harm mostly as a response to emotional distress (e.g., anger, sadness, fear, frustration, lack of control) often caused by family relational difficulties or interpersonal challenges, the majority seem to self-harm as a response to unpleasant or negative interpersonal circumstances, with the goal of changing those circumstances.

The emphasis on family relationships, social roles, morals, and context-specific factors in the narratives of the adolescents and views of the adult stakeholders in this study is consistent with the construction of the self and meaning-making system in collectivistic societies including Asia and Africa (Bantjes, & Swartz, 2019; Gyekye, 1995, 2003; Wang, 2004; Wiredu & Gyekye, 1992). In these societies, collective norms, community characteristics and other-centred social roles and interactions, rather than individual specific characteristics and experiences constitute the frame of reference in the construction and presentation of the self and meaning-making in daily life (Gyekye, 1995, 2003; Wang, 2004).

Based on this communal world view, the accounts of some of the adolescents in this study portray self-harming behaviours in adolescents as relational acts that can be interpreted in communicative terms as a protest against harsh punishment, abuse and powerlessness, assertion of innocence, cry for help, and an appeal. This evidence fits the theoretical model of interpreting self-harm as communication (Hjelmeland et al., 2008; Knizek & Hjelmeland, 2007; Nock, 2008). In the Caribbean, Asian and African contexts, families have absolute control and power over their young members and women, particularly the social relationships and sexual behaviours of females; children and adolescents are considered immature to contribute to the decisions which affect their lives; and there are strict rules of obedience and respect (e.g., Bolz, 2002; Brown et al., 2017; Gyekye, 2003; Nukunya, 2016; Marecek, 2006; 1998; Pumariega & Sharma, 2018). Although many countries across Africa are witnessing steady social changes through Westernisation, media, and formal classroom education, which emphasise the freedom to exercise fundamental human rights, independence, assertiveness and individuality, most families and societies within the continent are still deeply rooted in patriarchy with strict adherence to rules guiding traditional power relationships (e.g., Abotchie, 2013; Kizza et al., 2012; Mudau & Obadire, 2017; Nukunya, 2016). Young people occupy the base of the traditional power hierarchy, with no rights to complain or protest injustice. Young people who break the rules of obedience and respect and social comportment are often punished to deter repetition, save the honour of the family and protect traditional power relationship. Sometimes, significant other adult relatives (including parents and adult siblings) go overboard to abuse young people physically and emotionally in exercising their right to punish young people for coming into conflict with the family's honour (Nukunya, 2016).

Available evidence suggests that some young people feel trapped and powerless in these family circumstances, hence they resort to self-harm or suicide as an escape, a protest, or as a socially intense way to communicate their

displeasure, or for the family to find it legitimate to punish the significant other adults for the excesses in exercising their right to control and punishment (e.g., Beekrum et al., 2011; Hicks & Bhugra, 2003; Kizza et al., 2012; Marecek, 1998; Marecek & Senadheera, 2012; Paiman & Khan, 2017; Sefa-Dedeh & Canetto, 1992). Consistent with this evidence, some of the adolescents in the present study used self-harm in communicative terms as a protest against powerlessness, harsh punishment and abuse by their family, to assert their innocence of accusations of involvement in unapproved romantic relationships and immoral sexual behaviours, as a cry for help to escape material and financial difficulties, and as an appeal, requesting changes in the behaviours of their primary caregivers.

At this point, an interesting seeming contradiction in the evidence of this study emerges as follows. Self-harm in adolescents is viewed as relational acts interpreted in communicative terms as “cry for help or control”, “protest against harsh punishment and abuse”, “assertion of innocence”, and an “appeal”. This is further supported by evidence from the cross-sectional survey (Chapter 3) that many of the adolescents self-harmed as a way of influencing significant others (e.g., to punish others, get help from others or make someone feel guilty). However, this interpretation of adolescent self-harm as communication appears to be in contrast with the key adult stakeholders’ view that self-harm in adolescents in Ghana is “hidden”. How is self-harm in adolescent ‘communicative’ if it is ‘hidden’ or ‘out of sight’? Perhaps, drawing from the views of the key stakeholders in this study, it could be the case that individual acts of self-harm were not hidden; the evidence of the key adult stakeholders downplaying the extent of self-harm in adolescents but agreeing that the phenomenon is now a public concern in Ghana could be due to the key adult stakeholders not doing the intellectual work of aggregating known multiple individual cases of adolescent self-harm.

The finding that the adolescent participants self-harmed mostly as a response to emotional disturbance often caused by interpersonal challenges or family relational difficulties could be understood in terms of some available experimental evidence (e.g., Christensen, Di Costa, Beck & Haggard, 2019; Ellis, 1990; Seibert & Ellis, 1991) that strong negative emotions (such as depression, anger, sadness, fear, anxiety, or frustration) are linked to poor problem-solving capacity and reduced subjective sense of control over an action and outcome. In other words, although experimental evidence could be artificial by its laboratory nature, it does provide some normative basis to understand that adolescents experiencing strong negative emotions tend to be more likely to experience reduced sense of personal control over their own actions; they experience reduced impulse

control, which leads to increased chances of engaging in risky behaviours including self-harm.

Additionally, some of the participants in the present study identified the primary triggers of these negative emotions as external factors often within familial and interpersonal relationships and interactions. This external causal attribution appears to inform the adolescents' denial of any personal agency or responsibility for their self-harm. This denial of personal responsibility may not only be consistent with the impersonal causality attribution hypothesis (Malle, 2011), but could also be pointing to the adolescents' level of intentionality to harm self. However, given that in the accounts of some of the adolescents they tacitly implied a denial of any personal responsibility for their self-harm, it could also be possible that the relationship between social adversity and self-harm is not consciously mediated by cognitions or directly mediated by emotions (Richmond, Hasking & Meaney, 2017; Whitlock, Voon & Rose, 2017; Wilcox et al., 2012). Perhaps, future studies could explore this further to show how cognitions and emotions mediate the relationship between social adversity and self-harm in adolescents (Whitlock et al., 2017).

Furthermore, this finding that self-harm is a response to negative emotions mostly triggered by external circumstances supports the evidence in the literature that challenges the dominant discourse of medicalising or pathologising and individualising self-harm (e.g., Adler & Adler, 2007; Doyle et al., 2017; Ekman, 2016; Straiton et al., 2013). Socio-cultural experiences and circumstances play significant roles in the onset and maintenance of self-harm, particularly in community samples where medical or psychiatric conditions may be absent (Adler & Adler, 2007; Ekman, 2016; Straiton et al., 2013). This evidence also supports the basis for the calls on the government of Ghana to repeal the law (Act 29 of Ghana, 1960: Section 57; sub-section 1) that criminalises attempted suicide in the country (e.g., Hjelmeland et al., 2014; Osafo et al., 2017; 2018) and rather consider investing towards the improvement and expansion of the mental healthcare system in the country (Roberts et al., 2014).

4.4.4. Stopping and recovery from self-harm in adolescents

Many of the adolescents evaluated their self-harm as religiously sinful and socially injurious to significant others, and for most of them this evaluation reportedly seemed to motivate their non-repetition of the behaviour. This evidence supports published findings from the Caribbean and other LAMICs, where adolescents' cognitive re-appraisal of their self-harm as socially and religiously immoral influences the cessation and recovery from the behaviour (e.g., Arora & Persaud, 2019; Pumariega & Sharma, 2018; Toussaint et al., 2015). Generally, the available

evidence suggests that religiosity can be protective against self-harm but not necessarily protective against the thoughts of self-harm (Burshtein et al., 2016; Eskin et al., 2019; Jacob et al., 2019; Kazi & Naidoo, 2016; Lawrence et al., 2016; Lester, 2017).

This evidence of the present study that adolescents' cognitive re-appraisal of their self-harm as socially and religiously immoral influenced the cessation and recovery from the behaviour is not particularly surprising, as the socialisation of children and young people in Ghana is mainly informed by religious beliefs and mores (Gyekye, 2003; Nukunya, 2016). What is however not clear is "how" these religious and interpersonal moralities influence the cessation or recovery from self-harm, nor indeed why such belief systems do not stop self-harm before it starts. Knowing the process or procedure this cessation or recovery follows can potentially inform interventions and prevention efforts in practical ways. It appears that, with the benefit of hindsight, some of the adolescents in this study have learnt to 'replace' their thought to self-harm with the re-appraised thought that self-harm is religiously sinful and interpersonally injurious to others, and this replacement of thoughts appears to help the adolescents to avoid self-harming. Additionally, it is possible to speculate though that, stopping self-harm because it is re-appraised as religiously sinful and interpersonally injurious to others could potentially give rise to emotional suppression, where adolescent adherents of religious teachings against self-harming behaviours – as all religious groups in Ghana have strong doctrines against self-harm and suicide – may attempt to inhibit, conceal, or reduce an occurring urge or emotion-expressive behaviour related to self-harm (Akotia et al., 2014; Gross, 2002; Gross & John, 2003). Even though it is possible that some of the adolescents might have provided socially desirable responses, it is worth suggesting that future studies could examine how religious and interpersonal moralities influence the cessation and recovery from adolescent self-harm.

As expected, most of the adolescents who reported cessation or recovery from self-harm indicated that they also relied on informal support sources. Family support featured in the narratives of the in-school adolescents, whereas support from friends featured prominently in the accounts of the street-connected adolescents. This is consistent with evidence from one-time cross-sectional and longitudinal studies (e.g., Gelinas & Wright, 2013; Gauvin et al., 2019; Mummé et al., 2017; Rotolone & Martin, 2012; Tatnell et al., 2014; Turner et al., 2014; Whitlock et al., 2015). In Ghana, in-school adolescents typically live with and under the guardianship of their biological parents or kinship foster parents (Nukunya, 2016), making family relationship and support a critical component in the growth and

welfare of adolescents (Steinberg & Morris, 2001; Tatnell et al., 2014). Street-connected adolescents in Accra mostly live alone, hence tend to form social relationships and network of friends that serve not only as a source of support in times of difficulty but also as a survival strategy (DSW et al., 2011; Markwei & Rasmussen, 2015; Mizen & Ofosu-Kusi, 2010; Orme & Seipel, 2007)

However, most participants in both groups of adolescents in the present study showed a general sense of apathy in seeking help for their self-harm from formal sources available to them, even though many of them believed that talking to a trusted adult about emotional problems is helpful: teachers, counsellors, nurses, and social workers. Besides social stigma and the possibility of the social and legal proscription of self-harm in Ghana accounting for this adolescent help-seeking apathy, the evidence could also be reflecting the general low level or lack of help-seeking by adolescents from formal or professional sources reported in the global literature (Han et al., 2018a, 2018b; Michelmore & Hindley, 2012; Oldfield et al., 2016; Rowe et al., 2014). However, in simple practical terms, inferring from the accounts of the adolescents in this study, it is possible that at the point when the adolescents experienced the urge to self-harm they were overwhelmed by negative feelings which prevented the thought of help-seeking from occurring to them (e.g., Wilcox et al., 2012). Given the importance of professional help-seeking in the prevention and recovery from self-harm (Han et al., 2018a, 2018b), future studies from Ghana could consider examining the experiential accounts of adolescents on the specific factors presenting as barriers and facilitators of professional help-seeking and how to improve the factors that facilitate adolescent help-seeking within the school and charity facility contexts.

Another finding of the present study is that, among the street-connected adolescents, their overarching orientation for survival and sense of autonomy were implicated as key protective factors against self-harm. The adoption of potentially self-destructive alternative behaviours as coping strategies to distract from self-harm was also common among the street-connected adolescents. Although these are interesting findings, they are not necessarily unexpected, as previous evidence from Ghana suggests that, the preoccupation of street-connected children and youth with daily survival overrides all other needs (DSW et al., 2011; Mizen & Ofosu-Kusi, 2010; Orme & Seipel, 2007). Although mostly unhealthy and fraught with risks, street-connected children and youth have a strong sense of resilience; they do various menial jobs, whilst others engage in criminal activities as a means of livelihood (Asante & Meyer-Weitz, 2015; Hatløy & Huser, 2005; Libório & Ungar, 2009). Compared to young people in school who live with their families, most street-

connected children and youth live without adult supervision and control, making street living to be associated with some relative sense of freedom and autonomy. Street-connected adolescents are adultified, fending for themselves and taking the key decisions which affect their life (Schmitz & Tyler, 2016). The implication is that, family factors related to adolescent self-harm such as parental control over adolescent social relationships, sexual behaviours and earnings from work, strict parental monitoring, punishment by parent, and parent-child conflict may not be strongly identified with self-harm among street-connected adolescents.

The use of equally self-destructive behaviours (i.e., substance abuse) as coping strategies to distract from self-harm reported by some of the street-connected adolescents in the present study could be explained in terms of the unrestricted access to and cheaper prices of these substances, coupled with the stimulating and mood elevation effects of drugs, alcohol and certain medicines (e.g., tramadol) available on the streets (e.g., Salm-Reifferscheidt, 2018). In other words, possibly, some of the street-connected adolescents 'substituted' their urge to self-harm with substance abuse, which is equally self-destructive, at least in the long-term. It could also be the case that self-harm and substance abuse are different responses to the same distress. In providing support and intervention towards the cessation and recovery from self-harm among street-connected adolescents, street social workers should teach positive coping strategies and assess whether the adolescent has substituted their self-harm with a pleasurable but equally self-destructive behaviour.

4.4.5. Adult stakeholders' response to self-harm in adolescents

The positive attitudes and willingness to support adolescents who self-harm as reported by the key adult stakeholders in this study are important in responding to young people who (are at risk of) self-harm. Available evidence suggests that adults (including teachers, parents, and health professionals) who show positive, non-judgmental attitudes towards young people who (are at risk of) self-harm tend to positively influence future help-seeking intentions of these young people (e.g., Boukouvalas et al., 2019; Evans & Hurrell, 2016; Kelada et al., 2018; McAndrew & Warne, 2014; Rosenrot & Lewis, 2018; Rowe et al., 2014).

Despite these positive attitudes, the adult stakeholders (particularly, the school staff) talked about their lack of competence and confidence in offering support to young people who (are at risk of) self-harm. This is consistent with recent evidence from South Africa (Shilubane et al., 2015) and some high-income contexts (e.g., Berger et al., 2015; Dowling & Doyle, 2017; Evans et al., 2018; Ross et al., 2017; Shelemy et al., 2019; Sisask et al., 2014) where teachers reported lack of

professional knowledge and skills in performing their role as frontline staff to offer mental health support to students who (are at risk of) self-harm. Thus, as expected, the school staff and social workers in the present study expressed their need for training and education on understanding and responding to adolescent self-harm (and child and adolescent mental health issues in general). They suggested the inclusion of adolescent mental health issues in the social work and teacher training curricula and as part of social workers' and teachers' continuing professional development training programmes. Among other things, such in-service and pre-service staff training should address the fear related to the misconception that talking about self-harm or suicide 'places the idea to try out the behaviour into the heads of young people' (Evans et al., 2018; Robinson & Clarke, 2019), and the need to avoid separating self-harm neatly into 'suicidal' and 'non-suicidal', in responding to adolescent self-harm (James & Stewart, 2018; NICE, 2012; Sommers-Flanagan, & Shaw, 2017). This suggestion of stakeholder training is imperative as studies have shown that the training of key stakeholders and adult gatekeepers is critical to the supportive roles these adults play towards improving the mental health of children and adolescents (Berger et al., 2014a; Brown et al., 2018b; Evans & Hurrell, 2016; Lamis et al., 2016; Mo et al., 2018; O'Reilly et al., 2018; Robinson et al., 2018; Wolitzky-Taylor et al., 2019).

Relatedly, the school and charity facility staff in the present study expressed a strong need for having well-articulated and clear protocols for responding to adolescent self-harm. Evidence from recent primary studies, systematic reviews, Delphi studies, and recommendations by key position papers have underscored the importance of schools and child and adolescent-centred institutions having protocols for responding to self-harm in young people (Berger et al., 2014b; Cox et al., 2016; De Riggi et al., 2016; Hasking et al., 2016; Leschied et al., 2018; Lewis et al., 2019a, 2019b; Singer et al., 2019; Whitlock et al., 2018). "The advantage of having a written protocol is that staff know how to respond to self-injury systematically and strategically" (Walsh, 2006, p.245).

The school staff in the present study suggested the inclusion of child and adolescent mental health issues (including adolescent self-harm) in the school curricula. Such adolescent mental health literacy promotion content could, among other things, focus on issues related to life skills development, emotion regulation, provision of peer support, and help-seeking. Emerging evidence from high-income contexts shows that school-based mental health promotion programmes lead to increased mental health awareness and favourably influence help-seeking

behaviours among young people (e.g., Barker & Mills, 2018; Campos et al., 2018; Ojio et al., 2019; Ratnayake & Hyde, 2019; Salerno, 2016).

Some of the teachers in the present study also suggested that teachers' roles should be redefined to include the provision of social care to students, to enhance teachers' response to adolescent self-harm. They argued that the present job description of teachers is largely focus on performing academic roles of teaching towards enhancing student academic achievements, without any caregiver roles of providing emotional support to students. They observed that currently adolescents face various mental health challenges, yet many schools do not have counsellors and mental health professionals to provide support to these young people within the school context. There is an acute shortage of mental health professionals in schools in Ghana (Jack et al., 2013; Quarshie et al., 2016); where available, the mental health professional is over-burdened with the simultaneous roles of teaching students and offering professional mental health services and support to both students and school staff. Hence, with the right pre-service and in-service staff professional training, some of the participants in this study believe that redefining the roles of teachers to include social care (e.g., identifying signs of self-harm, giving teen mental health first aid, providing additional onsite counselling, and signposting further support available to at-risk students) would help augment the efforts of school mental health professionals. In a previous study from Israel on managing school violence, Somech and Oplatka (2009) found that teachers who perceived and were willing to handle school violence as part of their core roles presented a significant positive influence on reducing school violence than teachers who perceived playing such roles as voluntary. However, further evidence is needed for the finding in the present study; future studies could consider examining the endorsement and attitudes towards this suggestion (of adding social care to teachers' roles) among a large sample of teachers in Ghana. The evidence from such future studies could help explore the boundary between the performance of core academic roles and the provision of social care by teachers; the evidence could also help address the potential concern of this suggested additional role creating an extra burden for teachers in schools that are acutely understaffed but with larger class sizes and increasing student populations (Opoku et al., 2019).

4.4.6. Strengths of study

Across the global literature, this study represents the first attempt at simultaneously including both in-school and street-connected adolescents and selected key adult stakeholders in the same qualitative study on exploring the perceptions and meanings of adolescent self-harm within an underserved context. The strength of this is that the data provides an initial integrative picture of how self-harm in adolescents is variously perceived and interpreted by the different groups of participants; this snapshot of evidence can serve as a beginning point for future studies aimed at exploring the attitudes of various groups towards adolescent self-harm, within the same study context.

As evident in the systematic review of this thesis (Chapter 2), the available qualitative studies exploring the first-person accounts of adolescent self-harm in sub-Saharan Africa have all mainly been conducted in South Africa (Beekrum et al., 2011; Meissner & Bantjes, 2017; Shilubane et al., 2012). Thus, the present study represents the first, from Western sub-Saharan Africa and Ghana, to document qualitative evidence on the lived experiences of in-school and street-connected adolescents and the views of selected key adult stakeholders on self-harm in adolescents.

The evidence of this study can be generalised contextually and universally. Contextually, the evidence can be applied to both the Ghanaian situation and the situation in other countries within sub-Saharan Africa. As shown in the systematic review of this thesis (Chapter 2), the contextual knowledge and practices related to socio-cultural norms and value systems, family life, education, and street living are more similar than different within and across countries in sub-Saharan Africa. Universally, the evidence of this study is consistent with findings from recent global systematic reviews and meta-syntheses of evidence from primary (qualitative) studies in the area (e.g., Mummé et al., 2017; Wolitzky-Taylor et al., 2019); the present study supports the observation that self-harm in young people is a global public health challenge (Brown & Plener, 2017).

4.4.7. Limitations of the study

As shown in Figures 4.1 and 4.2, relatively, more girls (n=26) than boys (n=10) agreed to participate in this study. Although the focus of this study was to gain in-depth understanding of adolescent self-harm but not to achieve statistical generalisation, a fair representation of boys would have broadened further the diversity of the lived experiences of self-harm shared by the adolescents. Maybe the face-to-face nature of the interview might have discouraged many potential participants, particularly boys. It is noteworthy that all three adolescents in this

study who opted to be interviewed via telephone were boys. Perhaps, future studies may consider arranging to interview participants through telephone, as this mode appears to offer some boys an increased sense of privacy.

As discussed earlier, the criminalised and socio-culturally proscribed status of self-harm in Ghana might have created the tendency for some participants to misrepresent their lived events in guarded and socially desirable ways, engage in non-disclosure, lie and use other impression management strategies in the interview context. With this mind, the reliability of the accounts of the participants in this study cannot be fully guaranteed. Even though attempts have been made throughout the analysis to explore the meanings of the results beyond the face value of the views of the participants, there is the need to accept the interpretations of the findings with caution.

Similarly, the adolescent participants had to recall their (last episode of) self-harm, which for some participants was up to four or eight years prior to this study (see Tables 4.1 and 4.2). This considerable time lag could potentially lead to forgetting, distorted memories of the circumstances leading up to their self-harm and their emotional experiences at the time or might have modified the interpretation of their self-harm (Althubaiti, 2016; Gardner, 2001; Widom, 2019).

It has also been mentioned earlier that, comparatively, the interviews with the in-school adolescents were comprehensive and longer than those with the street-connected adolescents. Most of the street-connected dozed off or showed reduced concentration mostly after the first 20 or 25 minutes of the interview. Although upon realising this the interviewer revised the interview protocol by asking the key questions earlier, obtaining comprehensive narratives and responses to key probes was difficult; some participants slept off completely due to fatigue.

4.4.8. Conclusion

Self-harm in adolescents is presently an issue of public concern in Ghana. The first-person accounts of adolescents and views of their key adult stakeholders in this study implicate familial relational problems and interpersonal difficulties as proximally leading up to self-harm in adolescents. Self-harming behaviours in adolescents are interpreted as an emotion management strategy, but more as a strong communicative signal in response to powerlessness and family relationship difficulties. Universal prevention strategies and stakeholder early intervention efforts are suggested for prevention of the phenomenon in Ghana.

Chapter 5

5.0. General Discussion

5.1. Overview

This chapter summarises and provides a general discussion of the key findings of the empirical study components and identifies the general strengths and limitations of this thesis. Besides the discussion of the theoretical, policy and practical implications of the key findings, suggestions for future studies in the research area and overall conclusions of this thesis are also presented.

Within the global literature, this thesis represents not only the first attempt at systematically synthesising the available and accessible evidence on adolescent self-harm across countries within sub-Saharan Africa, but also the first research effort at simultaneously including both in-school and street-connected adolescents in an integrative and a comparative cross-sectional survey and an interview study, describing the prevalence estimates and correlates of self-harm, and exploring the lived experiences of the adolescents and the views of some key adult stakeholders regarding the phenomenon in Ghana. The thesis is structured around five chapters: the first chapter provides a general introduction, Chapters 2 – 4 cover the main empirical study components of the thesis, whilst the last chapter (the present chapter) presents a general integrative discussion of the key findings and conclusions of this thesis.

Chapter 1 sets the stage for this thesis. Given that the area of self-harm research is replete with disagreements and debates about the definition and nomenclature of the term “self-harm”, this thesis started off by highlighting some of the key arguments in the area, and more importantly, by specifying the exact definition of “self-harm” applied in this thesis. Currently, the debate is mainly between the use of the terms, “nonsuicidal self-harm (NSSI)” and “self-harm” (Berman & Silverman, 2017; Kapur et al., 2013). In this thesis, “self-harm” is preferred and taken to mean any intentional “act of self-poisoning or self-injury carried out by an individual irrespective of motivation” (NICE, 2012, p.14). Even though this definition is broad (Skegg, 2005), its descriptive nature affords an international common ground for the purposes of epidemiology and surveillance (WHO, 2016). Similarly, “adolescents” is variously defined in the literature. In this thesis, “adolescents” is defined as persons aged between 10 and 25 years. This

age band is consistent with persons considered to be young within African countries and other LAMICs; the upper age limit of 25 years is considered appropriate, as late adolescence is relatively closer in age with early adulthood (Aggarwal et al., 2017; Sawyer et al., 2018).

Furthermore, Chapter 1 draws from the recent international literature to provide the scientific background and rationale for this thesis. Self-harm represents a significant international public health challenge, even though considerable variability exists in the prevalence estimates of self-harm in adolescents, with multiple risk factors and reasons reported for the behaviour (Hawton et al., 2012). While most studies on self-harm in adolescents have been conducted in high-income countries, the phenomenon is largely under-researched in LAMICs (Aggarwal & Berk, 2015; Aggarwal et al., 2017; Muehlenkamp et al., 2012; Swannell et al., 2014; Valencia-Agudo et al., 2018).

Against this backdrop, there have been regional and global calls recently for research attention to be given to issues related to the mental health of young people in countries within sub-Saharan Africa – the third most populous region of young people in the world (Kabiru et al., 2013; Omigbodun & Belfer, 2016; Patel et al., 2018). In response, this thesis conducts three empirical studies to contribute evidence on self-harm in adolescents across sub-Saharan Africa generally, and specifically in Ghana – a Western sub-Saharan African country.

Finally, Chapter 1 outlines the general methodological considerations made in this thesis, including a careful description of the research approach used and ethical concerns addressed in the study of a sensitive issue such as self-harm in adolescents. Although the approach used in this thesis is associated with some limitations, generally, it addressed many of the limitations of other studies of this kind, particularly, as identified in the review of the literature from sub-Saharan Africa (Chapter 2).

5.2. Summary of empirical study components and key findings of thesis

In a sequential order, this thesis involved three empirical studies. A systematic review of the literature on self-harm in young people across sub-Saharan Africa (Chapter 2) was conducted first to, among other things, provide the basis for contextualising and informing the subsequent primary empirical studies of this thesis. Drawing on the key findings of the systematic review, an explanatory sequential mixed methods approach was adopted to conduct two primary studies in the Greater Accra region of Ghana, in Western sub-Saharan Africa, to assess: 1) the prevalence and correlates of self-harm among in-school and street-connected

adolescents (Chapter 3), and 2) explore adolescents' lived experiences and stakeholders' views of self-harm in adolescents (Chapter 4). The outline and key findings of each of these three empirical studies are highlighted and discussed below.

5.2.1. Chapter 2: A systematic review of self-harm in young people across sub-Saharan Africa

Fifty-seven studies of various designs and methodological quality available from 13 of the 46 sub-Saharan African countries met the inclusion criteria. Of the 57 studies included, 61.4% (n=35) were from South Africa alone, with no studies from Central sub-Saharan Africa meeting the inclusion criteria of this review. Generally, the findings of this review were consistent with evidence from high-income countries. Overall, considerable variability was found across the ranges of prevalence estimates reported: the lifetime prevalence median estimate was 13.5% (with an interquartile range [IQR] of 7.4% – 16.8%); the 12-month prevalence median estimate was also 14.3% (IQR: 11.1% – 22.2%); the 6-month prevalence median estimate was 18.5% (IQR: 15.3% – 22.3%); and the 1-month prevalence median estimate was 6.3% (IQR: 3.1 – 26.4%). Studies from Western sub-Saharan Africa reported the highest 12-month prevalence estimates (median = 21.1%; IQR = 14.5% – 27.3%), while studies from Eastern (median = 12.2%; IQR = 11.1% – 16.9%) and Southern (median = 12.7%; IQR = 8.8% – 20.1%) sub-Saharan Africa reported relatively similar 12-month prevalence estimates. Although these estimates provide some sense of an emerging pattern of likely similar prevalence estimates of self-harm in adolescents within countries in sub-Saharan Africa, the considerable variability of the estimates from some studies and countries influenced the overall sub-regional median estimates and IQRs observed. The findings regarding the prevalence estimates and factors associated with self-harm were mixed, in terms of age and gender; however, most of the studies reported relatively higher prevalence estimates among female adolescents.

Overdose of medications was the major method of self-harm reported among clinical samples, whereas self-cutting was commonly reported in non-clinical samples. Various personal, family, school, and interpersonal level factors were found to have significant associations with self-harm. No study reported protective factors against self-harm in adolescents. The sparse evidence also showed that adolescents simultaneously reported intrapersonal and interpersonal reasons for engaging in self-harm.

Most of the included studies (61.4%) were published between 2010 and 2018, after the emergence of many standardised comprehensive guidelines

regarding how to conduct and report research, for example, COREQ-32: the COnsolidated criteria for REporting Qualitative research, the STROBE Statement: Strengthening the Reporting of Observational Studies in Epidemiology (see Equator Network, 2019). However, many of the included studies in the review were of weaker methodological quality – a plausible indication that many researchers within the subregion do not utilise comprehensive guidelines (Glenn et al., 2019). The implication is that reviewers of manuscripts for publication and researchers of future studies should consider the adoption of relevant comprehensive guidelines to avoid breaches and omission of key methodological issues, in order to reflect more current standards of conducting and reporting research studies.

This systematic review underscored the need for high quality cross-sectional studies on prevalence estimates and longitudinal studies to provide evidence to clarify the correlates, risk and protective factors associated with self-harm in adolescents within sub-Saharan African countries.

5.2.2. Chapter 3: Prevalence and correlates of self-harm in adolescents in Ghana

A regionally representative sample of 2,107 (1,723 in-school and 384 street-connected) adolescents aged 13–21 years provided the data for this survey. Among other statistical tests, the data was analysed using multivariable logistic regression models.

Overall, the lifetime prevalence of self-harm was 20.2%, 12-month prevalence estimate was 16.6%, and 1-month prevalence estimate was 3.1%. Between the two adolescent groups, the prevalence estimates were varied, with relatively higher estimates reported by in-school adolescents (lifetime = 22%, 12-month = 18.2%, 1-month = 3.5%) than street-connected adolescents (lifetime = 12.2%, 12-month = 9.4%, 1-month = 1%).

Self-cutting was the most commonly reported method of self-injury, whereas alcohol and medications were the commonly reported means of self-poisoning. Overall, even though most of the adolescents reported both interpersonal and intrapersonal reasons for their self-harm, most commonly, intrapersonal reasons (mainly to get relief from unbearable thoughts) were stated for the last episode of self-harm. The multivariable modelling showed that, except for gender, age, and alcohol use, the factors associated with self-harm reported were overwhelmingly interpersonal (e.g., conflict with parents, being physically abused, parent conflict, difficulty making/keeping friends). The findings of this survey demonstrate that self-harm is a significant public health problem among in-school and street-connected

adolescents in the Greater Accra region of Ghana. However, qualitative studies are recommended to explore the individualised and contextual meanings of adolescent self-harm in the country.

5.2.3. Chapter 4: Adolescents' lived experiences and stakeholders' views of adolescent self-harm

The third empirical study of this thesis (Chapter 4) explored, through one-to-one interviews, the lived experiences of in-school and street-connected adolescents regarding self-harm, and the views of some key adult stakeholders (parents, school staff, social workers, and government representatives) about adolescent self-harm in Ghana. In all, 36 adolescents (24 in-school and 12 street-connected) and 11 key adult stakeholders participated in the study. Experiential thematic analysis of the transcribed interviews showed that the participants' accounts and meaning-making were elaborated more along the lines of social interactions with others, moral standards and familial relationships, with little emphasis on individual level difficulties and mental sates.

Figure 5.1 provides a summary of the outline and key findings of this thesis.

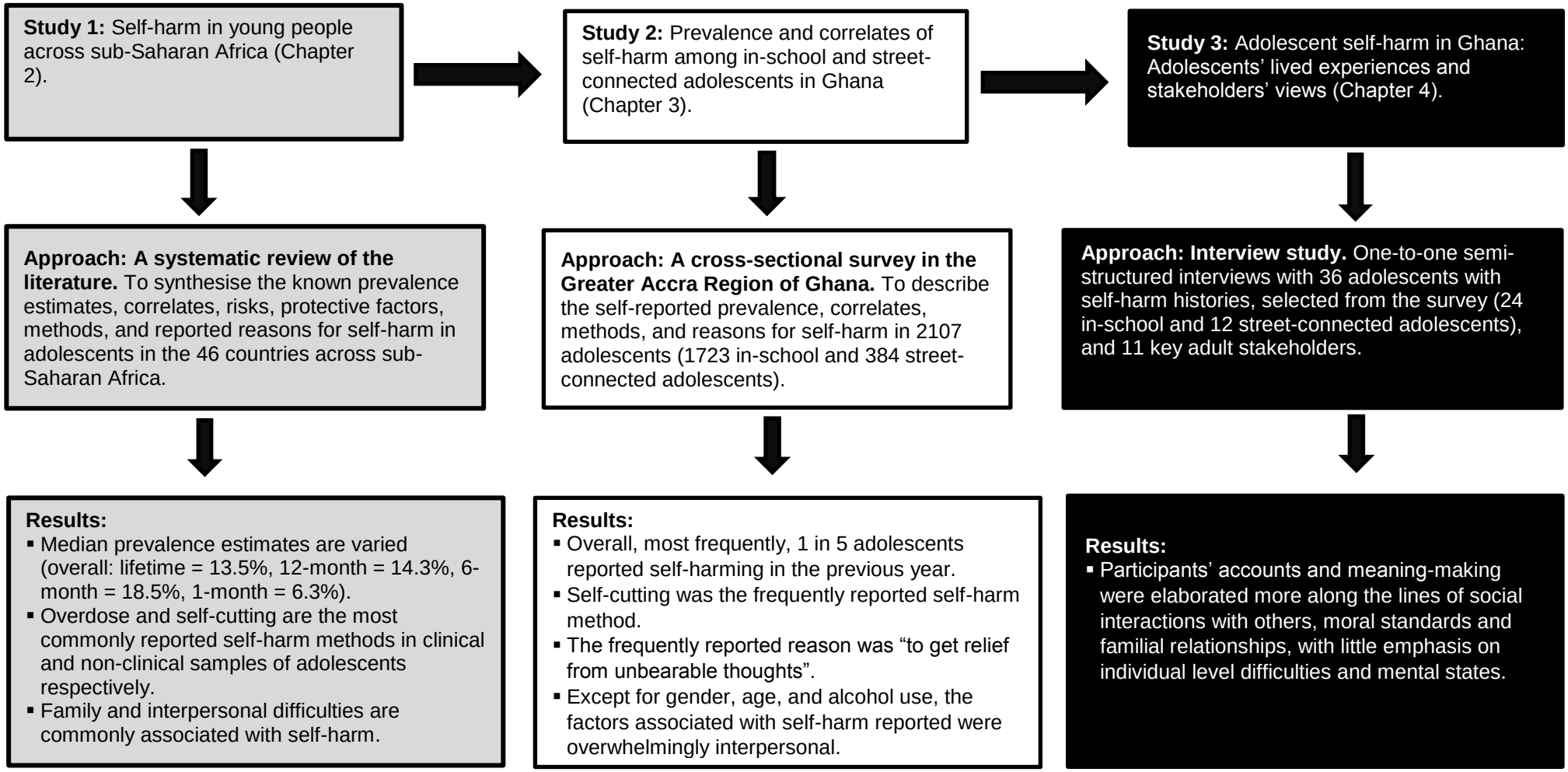

Figure 5.1: Overview of empirical studies and key findings of thesis

5.3. Prevalence estimates of self-harm in adolescents

The prevalence estimates of the cross-sectional survey (Chapter 3) are similar to the available estimates across sub-Saharan Africa (Chapter 2). Specifically, the estimates from the survey are much more similar to the median estimates from countries within Western sub-Saharan Africa – the subregion where Ghana is located. Generally, the estimates of the extent of the problem of self-harm in adolescents in this thesis (Chapter 2 & 3) are comparable to recent prevalence estimates from other LAMICs and high-income countries (Aggarwal et al., 2017; Vancampfort et al., 2019; Uddin et al. 2019; Monto et al., 2018; Muehlenkamp et al., 2012; Swannell et al., 2014; Valencia-Agudo et al., 2018). The interview study (Chapter 4) revealed that even though adolescent self-harm is now a public concern in Ghana, the behaviour is often 'hidden', as adolescents who self-harm often do not seek help or report to formal support sources. Taken together, the evidence of the prevalence estimates obtained in this thesis could be a reflection of the problem of self-harm in adolescents as a global public health challenge (Muehlenkamp et al., 2012).

5.4. Methods of self-harm

Consistent with the findings from the non-clinic-based studies included in the systematic review (Chapter 2) and evidence from high-income countries (e.g., Robinson, 2017; Rodham et al., 2004; Madge et al., 2008), generally, the participants in the cross-sectional survey (Chapter 3) commonly reported self-cutting as self-injury method, whereas alcohol and medications were the commonly reported means of self-poisoning; the findings showed no statistically significant gender difference in terms of methods of self-harm reported. However, between in-school and street-connected adolescents in the survey, the specific methods of self-harm reported were varied. More in-school adolescents reported using cutting, hitting body, alcohol, and poisons/caustic substances, whereas street-connected adolescents commonly reported hanging, stepping into traffic, medications, and illicit drugs. The use of these methods of self-harm is generally not surprising, as availability and access to these means of self-harm by the adolescent groups studied are almost unrestricted in the Ghanaian context (Chapters 3) – and within the wider sub-Saharan African setting (Chapters 2). In the interview study (Chapter 4), the adolescents implicated social contagion or media exposure to the self-harm of others, opportunistic exposure to means of self-harm, impulsivity, and control as influencing their choice of self-harm methods. However, predominantly, the

adolescents seemed more to make use of the available means at the time of their self-harm crisis than ‘choosing’ a particular means of self-harm. Put together, this is a worrying finding, as potentially most of the means of self-harm reported by the adolescents in this study have high risk of severe injury and lethality. This may be pointing to the need for governments within sub-Saharan Africa to intensify efforts at clamping down on the activities of untrained and unlicensed vendors of (counterfeit) medicines and drug dealers in the streets and open markets, and enforcing the laws regulating the sale of alcoholic drinks to underage persons. Also, families must lock away medicines and potentially injurious domestic objects (such as knives) from the sight and reach of children and adolescents known to be experiencing emotional distress. More importantly, further studies are required to provide evidence on prevention strategies focused on reducing the key precipitating factors of self-harm in adolescents and helping adolescents to develop problem-solving skills and encouraging help-seeking.

5.5. Reported reasons and factors associated with self-harm

As evident in studies from high-income countries (e.g., Edmondson et al., 2016; Hawton et al., 2012; Plener et al., 2018; Taylor et al., 2018; Valencia-Agudo et al., 2018) and within LAMICs (e.g., Aggarwal et al., 2017), the evidence from the empirical studies of this thesis (Chapters 2, 3, & 4) also shows that, generally, adolescents report multiple reasons for their self-harm, and self-harm in adolescents is often associated with multiple contributory factors. Interestingly, however, in the cross-sectional survey of this thesis, whereas intrapersonal reasons (e.g., “my thoughts were unbearable, I could not endure them any longer”, “I wanted to die”) were commonly endorsed as motivating self-harm, the multivariable modelling showed more interpersonal factors (e.g., conflict with parents, physical abuse) as contributing to self-harm.

The findings of the interview study (Chapter 4) provided some exploratory reflections for this seeming odd finding from the cross-sectional survey. The lived experiences shared by the adolescents in the interview study revealed that, the emotional disturbance which proximally preceded the adolescents’ self-harm was often precipitated by negative interpersonal circumstances. Thus, for some participants (particularly, those who repeated self-harm), engaging in self-harm seemed to be in response to emotional disturbance, while for others, self-harm appeared to be in response to often negative (interpersonal) circumstances leading up to the emotional disturbance, with the goal of changing those circumstances.

Furthermore, regarding the factors contributing to self-harm, as illustrated in Figure 5.2 below, the interview study showed that, on one hand, negative circumstances could have a direct relationship with self-harm or they could lead up to emotional disturbance, which in turn could influence self-harm. On the other hand, the emotional disturbance of some of the adolescents seemed to have led up to negative circumstances (e.g., verbal or physical abuse by parents), which in turn appeared to have precipitated the adolescents' self-harm.

Notably, even though generally the adolescent participants reported choosing self-harm for various reasons (including as a coping strategy or a way of distracting self from unbearable thoughts), it was not clear why self-harm was a more appropriate behaviour or response than other potential alternative behaviours (e.g., seeking help or running away from home). As indicated in Chapter 4, besides the global popularity of adolescent self-harm (Purington & Whitlock, 2010) plausibly accounting for the choice of the behaviour by the adolescents in this thesis, it is also possible that the adolescents simply did not know why they self-harmed, perhaps due to being in a dissociative state at the time of the incident or they were so emotionally troubled that self-harm seemed to be the only thing to do. It might also be suggested that the lack of clarity in the narratives of the adolescents for choosing self-harm (over other behaviours) could be due to the possibility that the precise questions were not asked in the interview study. Future studies could consider testing out appropriate and precise questions in pilot studies, as this could facilitate the formulation of accurate questions to ask in the main research interview.

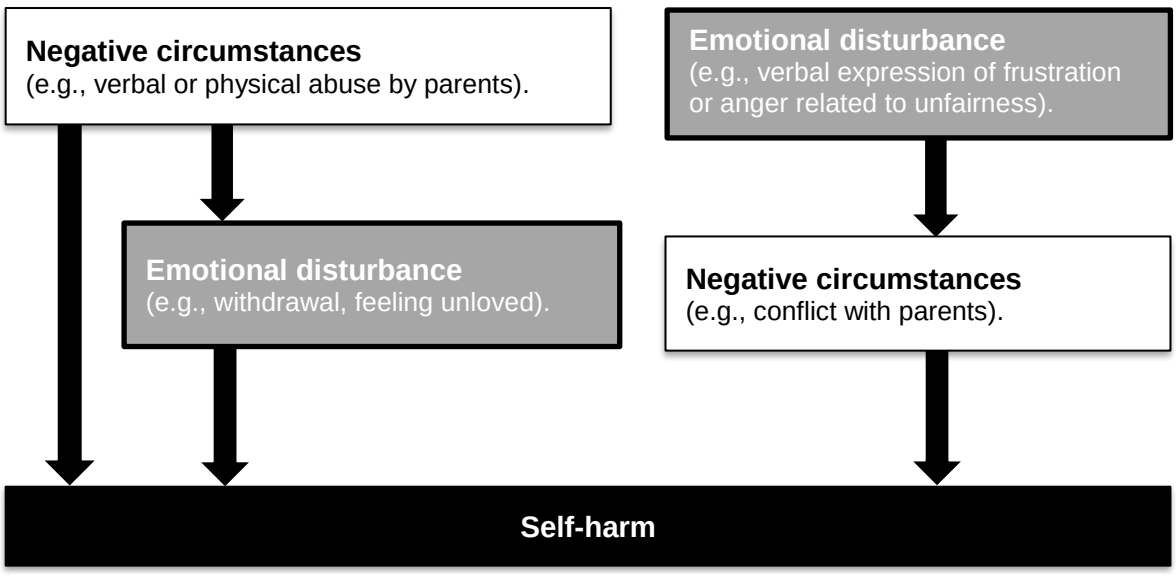

Figure 5.2: Relationship between circumstances and emotional disturbance, and self-harm

5.6. key contrasting and parallel findings between street-connected and in-school adolescents

Relative to in-school adolescents, insufficient evidence on self-harm in street-connected adolescents within sub-Saharan Africa emerged from the systematic review (Chapter 2). Only two studies reported on the prevalence estimates of self-harm in street-connected adolescents: Swahn et al. (2012) reported a 12-month prevalence estimate of 19.8% from Kampala, Uganda, whilst Asante and Meyer-Weitz (2017) reported a 1-month prevalence estimate of 26.4% from Accra, Ghana. Whilst the estimate by Swahn et al. (2012) was generally comparable to the 12-month prevalence estimates reported by other included studies among in-school adolescents, the estimate by Asante and Meyer-Weitz (2017) was much higher,[39] relative to the 1-month estimates reported by other included studies among in-school and out-of-school adolescents (e.g., Amare et al., 2018; Cluver et al., 2015). Thus, the estimates by these two studies [Swahn et al. (2012) and Asante & Meyer-Weitz (2017)] do not provide enough basis to compare the extent of self-harm between in-school and street-connected adolescents across sub-Saharan Africa.

However, the two primary studies (Chapters 3 & 4) of this thesis provide interesting similar and contrasting findings between the two groups of adolescents in the Greater Accra region of Ghana. In the survey (Chapter 3), comparatively, lower prevalence estimates were reported by the street-connected adolescents (lifetime = 12.2%, 12-month = 9.4%, and 1-month = 1.0%) than in-school adolescents (lifetime = 22%, 12-month = 18.2%, and 1-month = 3.5%). Consistent with the evidence of the systematic review, regardless of the adolescent groups, relatively higher estimates were obtained among females than males. Explanations for the difference in the prevalence estimates between street-connected and in-school adolescents were not readily clear from the cross-sectional survey; in fact, the cross-sectional showed that, relative to in-school adolescents, street-connected adolescents reported more negative events that were significantly associated with self-harm. But the adolescents' and adult stakeholders' accounts in the interview study provided some elaboration. Between the two groups of adolescents, control (having a sense of personal agency) emerged as the overarching theme related to the enactment and cessation of self-harm. Whereas lacking control (being

[39] Chapter 3 (Section 3.4.2) provides some plausible factors, including methodological quality, that could account for the much higher estimate reported by Asante and Meyer-Weitz (2017).

controlled) was reported as a ‘risk factor’ for self-harm, having control (being in control) was described as helping to stop self-harm.

Even though the adult stakeholders acknowledged the difficulty involved in obtaining reliable and valid self-reported estimates of self-harm among street-connected adolescents, they agreed that self-harm is likely to be less common among street-connected adolescents, because relative to in-school adolescents, street-connected adolescents have a higher sense of personal control and autonomy over their resources and social relationships. They argued that, generally, street-connected adolescents are more resilient than in-school adolescents; street-connected adolescents are self-reliant and often live alone, without any strict parental supervision and control.

The street-connected adolescents reported that they self-harmed infrequently, as they relied on their networks of friends and surrogate families on the streets for support when the need arose – a supportive situation that was contrary to the accounts of many adolescents who reported lack of support in their original families. More interestingly, the accounts of the street-connected adolescents showed how adultification in the family context presented as a risk for self-harm but served a protective function against self-harm in the street situation. The accounts of the street-connected adolescents revealed that being adultifed within the family context involved child powerlessness, as parents and the family do not allow the adultified adolescent to enjoy the rights of being an adult (e.g., taking part in decision making, controlling earnings from work, choosing friends), and their own basic needs (e.g., education, food) are often not fully met. For some adolescents, this state of being ‘adultified but powerless’ in their families partly motivated their self-harm, whilst for others, it motivated their decision to move away from their families and live on the streets, where they still remain adultified but with a greater sense of personal control. Thus, comparatively, adultified adolescents in the street context indicated having more control over their lives and seemed less likely to report self-harm, but adultified in-school adolescents living with their original families reported being controlled by their parents and families, which made them more likely to self-harm.

In the street context, some adolescents attend charity facilities and most have surrogate families and networks of friends. Charity facilities have rules of conduct and there are obligations (e.g., of reciprocity) in being a member of a surrogate family or network of friends. Although these contexts can be controlling for street-connected adolescents – for example, because they must obey strict rules

of conduct at charity facilities – relatively, they tend to have control and autonomy at least over their resources and social relationships more than in-school adolescents.

All the adolescents in the interview study who reported living with their families linked their self-harm to being controlled by their parents or families; they felt powerless (Chapter 4). Most of the in-school adolescents reported living with their families and were expected to obey, often, strict rules of comportment, the infraction of which attracted harsh punishment; they reported being under the complete control of their parents and families and dependent on them. However, the street-connected adolescents reported being, relatively, autonomous, self-reliant, and free spirited – which they believed served to protect them against self-harming. More importantly, the daily need for survival in the street situation seemed to be a strong protective factor against self-harm among the street-connected adolescents. Notably, however, given that street-connected adolescents are generally children, their seeming unrestricted sense of personal control and autonomy is compromised; many use alcohol and drugs, while the street situation exposes them to harsh and negative circumstances that are detrimental to their health and well-being.

Generally, the evidence of the systematic review and the cross-sectional survey of this thesis showed that self-harm in both street-connected and in-school adolescents is associated with multiple intrapersonal, familial, and extrafamilial factors. However, in the interview study, compared to in-school adolescents, the street-connected adolescents reported different concerns and living circumstances, which were related to their self-ham (e.g., abuses, survival needs such as work and food). Despite their different concerns, the street-connected adolescents attributed their self-harm entirely to interpersonal factors, whereas the in-school adolescents linked their self-harm to both intrapersonal factors (mostly emotional states) and interpersonal circumstances (mostly adverse family or parent-child relationship issues). This qualitative evidence is interesting but not entirely surprising. Whilst the accounts of the in-school adolescents are consistent with evidence from other sub-Saharan African countries (Chapter 2) and high-income countries (e.g., Kelada et al., 2018; McAndrew & Warne, 2014; Nicolopoulos et al., 2018), the accounts provided by the street-connected adolescents are not in keeping with the evidence from elsewhere (e.g., Gauvin et al., 2019).

As noted earlier, street-connected children and adolescents in Accra mostly live alone without their families; hence, they tend to form social relationships and networks of friends that serve not only as a source of support in times of difficulty but also as a survival strategy (DSW et al., 2011; Mizen & Ofosu-Kusi, 2010; Orme

& Seipel, 2007). As shown in the narratives of both the street-connected adolescents and views of the adult stakeholders in the interview study, living alone in the street context as a young person means that survival is an important concern: one has to fend for himself or herself by being self-reliant and forming supportive social connections. Also, it seemed plausible that the nature of the interpersonal relationships in the street context – where they are much more equal and clearly reliant on each other in a much more reciprocal manner is less likely to generate the sorts of emotional disturbance evident in the in-school adolescents. This implies that street-connected children and adolescents place greater value on their social and interpersonal relationships (Markwei & Rasmussen, 2015; Mizen & Ofosu-Kusi, 2010). It thus stands to suggest that plausibly, for street-connected adolescents, interpersonal relationships and networks of friends represent an important frame of reference – which might outweighs mental states – in their self-construction process and meaning-making system. In this vein, having troubles with interpersonal relationships in the street context could have implications for remaining isolated and being unhappy, which could in turn increase the chances for self-harm; whereas having supportive interpersonal relationships could be protective against self-harm in the street context.

5.7. Theoretical framework

Overall, the findings of this thesis are consistent with several theoretical frameworks and models: the ecological risk-factor model (Atilola, 2014; Bronfenbrenner & Morris, 2006; Perkins & Hartless, 2002), the diathesis-stress model (Brodsky, 2016; Evans et al., 2004; Mann et al., 1999), the functional model of self-harm (Klonsky, 2007; Nock, 2009), and the theory related to self-harm as communication (Hjelmeland et al., 2008; Knizek & Hjelmeland, 2007; Nock, 2008). The ecological risk-factor model posits that self-harm in adolescents is associated with multiple risk factors existing at multiple levels of the adolescent's social environment (Perkins & Hartless, 2002). Cumulative risk is central to this model: the probability of self-harming increases as the adolescent is exposed to various risk factors at multiple levels of the social environment. Thus, even though the risk factors associated with self-harm are expected to vary among individual adolescents, a single risk factor is not often expected to provide adequate explanation for self-harm in adolescents (Perkins & Hartless, 2002). The findings of the systematic review and the cross-sectional survey regarding the factors associated with (the onset and repetition of) self-harm are consistent with the ecological risk-factor model (Perkins & Hartless, 2002); the adolescents who reported self-harm also reported exposure to multiple

associated factors at various levels of their social ecology (i.e., intrapersonal, family, and extra-familial contexts such as peer groups, school, and neighbourhood). In making sense of their self-harm, in the interview study, the adolescents also implicated factors within the broader macrosystem (e.g., strict cultural norms and rules related obedience and comportment, parental control, child powerlessness, and media influence).

The diathesis-stress model represents a useful theoretical basis for understanding the overlapping and interactive nature of the risks and exposure factors associated with self-harm in adolescents. The model suggests that self-harm is a consequence of the interaction between a biological and behavioural predisposition to act on the urges of self-destruction, paired with a stressful factor such as a recent adverse life event (Brodsky, 2016; Evans et al., 2004; Mann et al., 1999). In this thesis (Chapters 2 – 4), besides the developmental stage of adolescence, female gender and problem-solving difficulties emerged as key diathesis factors for developing the tendency to self-harm. However, the experience of adverse life events and other stressful factors or circumstances (e.g., abuse, family conflict, neglect, powerlessness), in the presence of the diathesis, seemed to influence the enactment of self-harm by the adolescents.

According to the functional model, self-harm is repeated because it serves as an effective way of immediately regulating negative emotional experiences and social situations; self-harm serves as a means of both reducing negative emotional states and achieving positive emotions (Klonsky, 2007; Nock, 2009). In the cross-sectional survey of this thesis, the participants mostly endorsed intrapersonal reasons for their self-harm (e.g., to regulate negative emotions), while some interpersonal reasons (e.g., to get help from others) were also reported. However, even though the functional model could be applied to understanding the adolescents' reported reasons for self-harm as evident in the interview study, it seemed that engaging in self-harm was in response to emotional disturbance, or self-harm was in response to the circumstances leading up to the emotional disturbance, with the goal of changing those circumstances. The implication is that, it appears the functional model (formulated based mainly on statistical evidence) does not fit some portions of the qualitative data of this thesis.

The theory of self-harm as communication suggests that self-harm is enacted as an intensive means of expressing or asserting one's emotional or mental states (often created by external factors) in order to affect relationships, influence the behaviour of significant others or change social reality (Hjelmeland et al., 2008; Knizek & Hjelmeland, 2007; Nock, 2008). In the accounts of the

adolescents in this thesis, self-harm was portrayed as relational acts that could be interpreted in communicative terms as a protest against harsh punishment, abuse and powerlessness, assertion of innocence, cry for help, and an appeal. In other words, although some of the reported intrapersonal reasons – internal dialogue – as underlying their self-harm (Chapter 3), the adolescents' interpretation of their self-harm was mostly as an external dialogue, where they sought to influence the behaviour of significant others and/or change their adverse interpersonal circumstances (Chapter 4).

Put together, these theories provide a good basis for understanding the data of this thesis. Although each theory makes unique assumptions, it appears that essentially they all posit that self-harm in adolescence can be understood as a behaviour mostly 'caused' by interpersonal circumstances than intrapersonal factors or external factors than internal factors; it seems that adolescents mostly self-harm as a response to relational difficulties or to change adverse circumstances within their social environment than their mental or emotional states.

5.8. Implications and recommendations for policy, intervention and prevention

This sub-section presents the implications of the evidence of this thesis for health policy and intervention and prevention efforts in Ghana, based on the key evidence obtained in this thesis and suggestions for prevention by the participants of the primary studies.

5.8.1. Implications based on key evidence of thesis

5.8.1.1. Health policy

The 20.2% lifetime prevalence estimate of self-harm reported in this thesis (Chapter 3) is indicative that adolescent self-harm is a significant public health challenge in Ghana (or at least in the Greater Accra region), which warrants a more national concerted effort towards intervention and prevention. This thesis has demonstrated that self-harm in adolescents in Ghana is in response to emotional disturbance and stressful circumstances (Chapters 3 and 4). The evidence shows that self-harm in adolescents is not always suicide intended; even where the adolescents reported suicide intentions, the self-harm act represented a response to distress, serving as a means of distracting from or coping with emotional and psychosocial problems often 'caused' by interpersonal circumstances. Thus, self-harm should not be considered a criminal act. In this vein, this thesis adds to the various calls on the government of Ghana to repeal the law criminalising attempted suicide and rather

consider investing in the (mental) healthcare infrastructure of the country, including the formulation of policies aimed at enhancing the mental health of in-school and out-of-school young people, and the need to change negative public attitudes and stigma against persons who self-harm and families bereaved by suicide (Akotia et al., 2019; Asante et al., 2017, Baiden et al., 2018; Ohene et al., 2015; Osafo et al., 2015; Owusu et al., 2011; WHO, 2014).

Although Ghana has a mental health law (Act 846, 2012), the country has no national child and adolescent mental health (CAMH) policy, that includes a focus on effectively managing and addressing the distressing difficulties young people face by equipping them with the knowledge and skills they require to cope. Presently, the implementation of the mental health law (Act 846, 2012) is faced with numerous challenges, including a lack of the required legislative instrument for the implementation of the law (Walker, 2015; Walker & Osei, 2017). Mental healthcare and services in Ghana receive only 1.4% of the national health expenditure allocated to healthcare, which is also often skewed in favour of urban areas (Roberts et al., 2014). Ghana has an acute shortage of mental health workforce; most mental health patients are treated in psychiatric hospitals and outpatient facilities, and only 2.8% of mentally ill persons in Ghana are able to access professional care and treatment (Jack et al., 2013; Roberts et al., 2014).

Also, as can be said about the Department of Social Welfare – DSW – (which has no CAMH policy to guide the work of governmental and NGOs working with out-of-school young people), the Ghana Education Service – GES – has no health promotion policy that explicitly focuses on the mental health of child and adolescent students. The findings of the cross-sectional survey and the interview study underscore the need for the GES and the DSW to formulate self-harm prevention policies and protocols for schools and charities working with adolescents in Ghana. The school staff and social workers of the charities included in the interview study expressed difficulties and a lack of confidence in their attempts to provide support to adolescents who (are at risk of) self-harm, due to the non-existence of any protocol to follow.

Similarly, the lack of professional knowledge about adolescent self-harm expressed, generally, by the key adult stakeholders in this thesis highlights the need to include in the curricula of institutions that train teachers and social workers issues related to self-harm and suicide in young people, and child and adolescent mental health issues in general. The GES and DSW could also include issues of self-harm and suicide in young people in their continuous professional development

programmes for school staff and social workers. Besides improving professional knowledge, these measures could increase the confidence and competence of teachers and social workers in providing support to adolescents who (are at risk of) self-harm.

In the interview study, many of the adolescents self-reported that, prior to their own self-harm, they had seen self-harm in media contents (e.g., watching self-harm scenes on TV, reading suicide reports in newspapers) and the adult participants also argued that some adolescents learn to self-harm through watching self-harm scenes on television and seek ways to experiment the behaviour. Currently, Ghana has no guidelines for responsible media reporting of self-harm and suicide (Quarshie et al., 2018). Available evidence (Quarshie et al., 2015, 2018) describes media reporting of self-harm and suicide (including portrayal of the behaviours in films and TV shows) in the country as unethical, crude and sensational, as it is mostly replete with details and vivid descriptions that deviate from recommended best media practice for the reportage of self-harm and suicide (WHO, 2017). For example, media coverage of self-harm and suicide in Ghana often carries sensational headlines, with images of the (dead body of the) suicidal person, graphic description of the place and method used for the act, and where a suicide note was left, often, the content is reported verbatim (Quarshie et al., 2015).

There is a plethora of evidence from high-income countries that this way of reporting and portraying self-harm and suicide in the media is linked to imitation (copycat) and contagion of the behaviour by vulnerable persons, including children and adolescents (e.g., Niederkrotenthaler, et al., 2010, 2019; Ortiz & Khin Khin, 2018; Sinyor et al., 2019). Perhaps, the evidence of this thesis points to the need for the National Media Commission of Ghana, the Ghana Mental Health Authority and the Ghana Journalists Association to collaborate to formulate guidelines for responsible media reporting of self-harm and suicide in the Ghanaian media, using the WHO recommended guidelines as a starting point (WHO, 2017).

5.8.1.2. Intervention and Prevention

Generally, the evidence of this thesis suggests that intervention and prevention efforts and strategies should focus mostly on reducing the circumstances and problems that ‘lead’ to self-harm in adolescents and supporting adolescents to develop problem-solving skills and encouraging help-seeking from available and accessible professional sources within the school and community contexts.

The evidence of the cross-sectional survey that adolescents faced with multiple stressful life events are more likely to self-harm may be pointing to the need for the institution (and where available, the improvement) of on-site child and

adolescent counselling services, to support and encourage mental health help-seeking among street-connected young people attending charity facilities and young people in school. In the same regard, parents, primary caregivers, social care professionals, teachers, counsellors, and healthcare professionals working with in-school and street-connected adolescents should consider providing these young people and their peers with emotion regulation skills, healthful problem-solving strategies, and social skills training, as these skills and strategies have strong positive relationships with reduced vulnerability and cessation of self-harm in young people (Brent et al., 2013).

The evidence of the cluster analysis on the profiles of adolescents at risk of self-harm provided by this study (Chapter 3) can inform street-based psychoeducational programmes often put together by mental health professionals and social care professionals for young girls living on the streets. In schools, counsellors and teachers may find the evidence useful in identifying female students who are at a higher risk of self-harm, in order to support them or connect them to other support sources.

This study provides clear evidence that although non-heterosexual orientation (i.e., lesbian, gay, bisexual, transgender) is tabooed and criminalised in Ghana, some adolescents in school and those living on the streets still identify as non-heterosexuals; the prevalence and odds of self-harming were higher among adolescents identifying as non-heterosexuals than heterosexuals. Evidence from high-income countries (e.g., Taylor, Dhingra, Dickson & McDermott, 2018) shows that adolescents who identify as non-heterosexual are at a higher risk of self-harm mainly due to the extreme hostilities, strong social stigma, and other socio-cultural stressors they face. Therefore, it could be suggested that, parents, guardians, teachers, counsellors, and social care professionals could focus on providing confidential individual level support that improves self-care, self-esteem and social skills, and help that encourages help-seeking among adolescents who identify as non-heterosexual. Beyond the data of the present study, it could be recommended that, perhaps, it is time for the Department of Social Welfare, the Ghana Education Service and local religious bodies to collaborate with the mass media to begin public education programmes aimed at changing negative attitudes and working towards removing the predominant socio-cultural factors which give rise to hostilities against sexual minorities in Ghana. More evidence on the health dynamics of persons identifying as non-heterosexual is needed to inform the calls by various interest groups on the government of Ghana to revoke the law against homosexuality.

Family related negative factors (e.g., parental conflict, parent-child conflict, and family member attempted suicide) were significantly associated with the odds and repetition of adolescent self-harm in the present study. The available study on adolescent suicide in Ghana (Quarshie et al., 2015) has also identified family related factors as having a strong connection with suicide among adolescents. This could be pointing to the need for family (problem-solving) therapy intervention, which mobilises and draws on the strengths and available resources of the adolescent (who self-harms) and their family (Carr, 2016; Cottrell et al., 2018; Harrington et al., 1998). Another important prevention target could be community-based programmes which educate parents and other primary caretakers of adolescents on family values, family conflict resolution dynamics, and adolescent emotional well-being and mental health issues, and how to provide support or refer distressed adolescents to school-based or community-based support resources (Leschied, Saklofske & Flett, 2018; Omer & Dolberger, 2015). Such community-based programmes should also provide practical information to parents and primary caretakers on how to restrict adolescents' access to potential means of self-harm within the home environment. For example, locking medicines away, keeping household poisons (e.g., rat poisons) out of the sight and reach of young people, and restricting known distressed young people's access to areas within the home where potentially injurious objects are kept. On the streets and in the open markets, government must intensify efforts at clamping down on the activities of unlicensed and untrained medicine sellers, drug dealers, and the sale of alcohol to minors.

Strategies targeted at improving family functioning (e.g., parent-child conflict resolution, adjustment of the parent-child power balance) and supportive parental response when adolescent self-harm is discovered could be helpful towards stopping and preventing self-harm in adolescents. Teaching emotion regulation and social problem-solving skills (e.g., being assertive but showing respect for age and status, distracting or delaying the urge to self-harm, seeking help and trusted, supportive company to avoid being overwhelmed by distress) and adaptive cognitive reappraisal techniques (e.g., thinking about the spiritual rewards for heeding – or the spiritual punishment for disobeying – one's religious beliefs that forbid self-harming, having concern for significant others who may be affected by one's self-harm, having self-compassion) to young people in the family, school, charity facility, and the streets could be helpful to adolescents in stopping or reducing the repetition of self-harm (Glenn et al., 2019; Turner et al., 2018; Wadman et al., 2018).

An important finding of the interview study is that some adolescents find their religious beliefs helpful in stopping self-harm. Perhaps this evidence could be pointing to the strategy of engaging religious resources and the inclusion of religious virtues (e.g., faith, hope, long-suffering, forgiveness, self-care) in the design of adolescent self-harm prevention efforts. Religious leaders could be trained to provide counselling and pastoral care to young people experiencing self-harm crisis. In the area of HIV/AIDS prevention for example, available evidence suggests that religion exerts considerable influence on people's sexual behaviours, and changing the attitudes of religious leaders and groups and involving them in public health campaigns has contributed significantly to the reduction of stigma and punitive attitudes towards persons living with HIV/AIDS in Ghana (Boulay, Tweedie & Fiagbey, 2009; Olivier & Wodon, 2015). However, as observed by Hirono (2013), "the role of the clergy is the missing link in the prevention of suicide, …many [professional mental healthcare] workers are overlooking the role of clergy in suicide prevention" (pp. 10-11).

This study shows that self-harm is a widespread challenge among adolescents in the Greater Accra region. Whether in-school or street-connected, adolescents encounter significant adults in their daily lives; although in-school adolescents mostly live with their parents at home, they spend most of their daytime in school with school staff. Many street-connected adolescents live alone on the street, work (often without adult supervision) or are employed by adults, others spend their daytime at charity facilities with social care professionals, while others live with their parents/families on the street. However, available evidence from sub-Saharan Africa (e.g., Shilubane et al., 2015) and elsewhere (e.g., Duggan et al., 2011; Hamza & Heath, 2018; Heath et al., 2006) suggests that although parents/guardians, school staff, and charity facility staff live with and/or work with adolescents, they frequently report a lack of understanding of adolescent self-harm and they feel inadequate, struggling to identify the best ways to respond to and support their adolescent wards or students who (are at risk of) self-harm. This underscores the need for stakeholder training for school staff (including teacher trainees), parents/guardians, social care professionals, charity workers, and street social workers on how to identify the signs of self-harm, the provision of mental first aid and intervention, and how to refer adolescents to other support sources (Gryglewicz, et al., 2018; Hart et al., 2018). Recent evidence shows that stakeholder training on self-harm prevention increases the confidence and competence of school staff and other adult stakeholders and gatekeepers in providing the needed support to young people experiencing self-harm or who are at

elevated risk of the behaviour (De Riggi et al., 2018; Evans et al., 2018; Leschied et al., 2018).

Given the diverse and complex nature of the experience of self-harm reported by the adolescents, it might be helpful to adopt person-centred approaches in providing support and interventions (e.g., McDougall et al., 2010; Mehlum et al., 2016; Morrissey et al., 2018). More so, available evidence suggests that involving families is beneficial to interventions and therapies for adolescent self-harm (e.g., Cottrell et al., 2018; Glenn et al., 2019; Ougrin et al., 2015). Adult stakeholders (particularly, school counsellors, nurses, and teachers) should, among other key factors, capitalise on the adaptive strategies and motivations that the adolescents use to naturally stop self-harm, while minimising or avoiding the maladaptive reasons and strategies (e.g., Gelinas & Wright, 2013; Lindgren et al., 2018).

5.8.2. Suggestions for prevention by participants of primary studies

As indicated in Chapter 4 (Section 4.3.4), the participants providing data for this thesis made various suggestions for the prevention of self-harm in adolescents in Ghana. Broadly, the participants' suggestions included legitimate targets for action and specific suggestions for interventions. The participants suggested seven legitimate targets for action towards the prevention of self-harm in adolescents in Ghana: *changing restrictive and punitive patriarchal parenting styles, restricting access to means of self-harm, limiting media effects of imitation and contagion of self-harm in adolescents, creating pro-mental health school and charity facility environment, reducing family poverty, increasing access to mental healthcare and support services,* and *destigmatising self-harm and suicide*. As shown in Table 5.1, the participants also made specific suggestions of intervention necessary to achieve each of the seven legitimate targets for action. Given the importance of evidence in self-harm intervention and prevention efforts (Pompili & Tatarelli, 2011), the participants' suggestions were presented and discussed in juxtaposition with the empirical evidence of this thesis, which could potentially serve as the bases for the suggested intervention – see Table 5.1.

Generally, the participants' suggestions for the prevention of self-harm in adolescents in Ghana were mostly related to universal or population level prevention, stakeholder early intervention efforts, and individual level behavioural change efforts. Findings from recent reviews of the evidence on multi-layered interventions that target multiple risk behaviours in young people show that

universal intervention efforts are more effective in preventing risk behaviours in young people (MacArthur et al., 2018). Specifically, the evidence shows that, in LAMICs, not only can structured universal interventions targeting the promotion of young people's (mental) health be effectively implemented within both school and community contexts but such interventions have the potential of yielding significant positive effects on the behavioural and emotional wellbeing of young people (Barry, Clarke, Jenkins & Patel, 2013).

As indicated in Table 5.1, the empirical evidence of the primary studies of this thesis (Chapters 3 and 4) provided potential bases for all the legitimate targets for action and most of the specific suggestions for interventions proposed by the participants. For example, the legitimate target for action, *restricting access to means of self-harm*, and the specific suggestion for intervention by which this target could be achieved, *families keeping potentially harmful objects and substances (e.g., knives, medicines) away from the sight and reach of adolescents showing signs of self-harm*, finds empirical support in the systematic review (Chapter 2) and the interview study (Chapter 4) that *some adolescents reported using some methods of self-harm because the means were available and accessible at home*.

Nonetheless, a closer look at the participants' suggestions (as shown in Table 5.1) reveals that although some of the suggestions are potentially useful and might yield significant preventive effects, their implementation could be challenging and could take a long time to happen in Ghana. Generally, the suggestions targeted at significant cultural changes (e.g., change of restrictive and punitive patriarchal parenting styles) and those requiring maximum political backing and commitment (e.g., setting up community youth mental health and support centres, decriminalising attempted suicide, formulating child and adolescent mental health policies for schools and charity facilities, implementing available child protection policies) have the potential of yielding the greatest public health impact of positive influence on the prevention of adolescent self-harm. However, their implementation could be fraught with difficulties (Frieden, 2010; Tomlinson & Lund, 2012).

Table 5.1. Participants' suggestions for the prevention of self-harm in Ghana

Specific suggestions for interventions	Legitimate targets for action	Empirical evidence of thesis
– Public education of familes on open parent-child communication and encouraging supportive parenting styles. – Community psychoeducation of street-connected families by social workers. – Encouraging supportive sibling relationship. – Government effectively implementing available child protection laws and policies.	1) Changing restrictive and punitive patriarchal parenting styles.	– Traditional parenting styles do not allow adolescents to participate in family decision making that affect them; some adolescents self-harm to get their voices heard (Ch.4). – The child is always wrong; the child is punished for expressing dissenting views and their feelings of anger and frustration relatd to unfair treatment by their parents (Ch.2 & 4). – Some parents (particularly, fathers) were identified as exercising excessive control and punishment of their children (Ch.2 & 4).
– Families keeping potentially harmful objects and substances (e.g., knives, medicines) away from the sight and reach of adolescents showing signs of self-harm.	2) Restricting access to means of self-harm.	– Some adolescents reported using some methods of self-harm because the means were available and accessible at home (Ch.2 & 4).
– Training media personnel on responsible media reporting and portrayal of self-harm and suicide.	3) Limiting media effects of imitation and contagion of self-harm in adolescents.	– Some adolescents reported that, prior to their own self-harm, they had seen self-harm scenes in media contents (Ch.4). – Some adult stakeholders indicated that some young people seek ways to experiment self-harm as portrayed in media contents (Ch.4).

Table 5.1 (continued)

Specific suggestions for interventions	Legitimate targets for action	Empirical findings of thesis
– Government formulating child and adolescent mental health policies for schools and charity facilities. – Including child and adolescent mental health issues in school curricula and the curricula for training teachers and social workers. – School and charity facility staff encouraging adolescents to seek help. – Adolescents in self-harm crisis should seek help from trusted sources. – Teachers and charity facility staff teaching adolescents problem-focused coping and emotion regulation skills. – School and charity facility staff providing confidential support to adolescents experiencing self-harm crisis. – Health professionals screening adolescents periodically at schools and charity facilities for self-harm tendencies.	4) Creating pro-mental health school and charity facility environment.	– The representatives of the Ghana Education Service and the Department of Social welfare reported that both institutions have no child and adolescent mental health policies guiding their work (Ch.4). – School and charity facility staff reported lack of protocols to follow to support adolescents who (are at risk of) self-harm (Ch.4). – School and charity facility staff reported their lack of professional knowledge and supportive skills to help adolescents who (are at risk of) self-harm (Ch.4). – Participants reported that many adolescents who (are at risk of) self-harm do not seek help because they perceive the available help source as non-confidential and untrustworthy, while other adolescents do not seek help at all even if help is available and accessible (Ch.4).
– Government pursuing social policies aimed at reducing (family) poverty	5) Reducing family poverty.	– Family poverty is the key reason for adultification of adolescents in their families, which in turn ‘leads’ to self-harm in some adolescents (Ch.4). – Family poverty is a major reason for some children and adolescents leaving their families to live on the streets, where they become vulnerable to harsh circumstances that ‘lead’ them to self-harm (Ch.4).

Table 5.1 (continued)

Specific suggestions for interventions	Legitimate targets for action	Empirical findings of thesis
– Government setting up community centres for youth counselling and mental health support services. – Training religious leaders to provide pastoral care to young people who (are at risk of) self-harm. – Setting up toll-free crisis helplines	6) Increasing access to mental healthcare and support services.	– Some participants identified the difficulty related to the unavailability of formal professional support sources within the community for young people (Ch.2 & 4). – Some participants believe that self-harm is due to diabolical manipulations and as such religious leaders are needed to play some interventional and preventive roles (Ch.4).
– Public education and awareness creation through mass media. – Train and engage religious leaders in public education. – Education of congregants by religious leaders. – Government decriminalising attempted suicide.	7) Destigmatising self-harm and suicide.	– Self-harm and suicide are tabooed and perceived in Ghana as shameful and disgraceful to self and family (Ch.2 & 4). – Most adolescents who self-harm hide it (Ch.4). – People are generally not aware of the prevalence, causes and signs of self-harm in adolescents (Ch.4). – Religious leaders are the foremeost source of help for some people in Ghana who experience self-harm and suicidal crisis (Ch.4). – Some adolescents reported that positive and pro-resilience religious virtues (e.g., hope, faith, long-suffering, self-care, forgiveness) helped them to stop self-harming (Ch.4).

Note: Ch. denotes Chapter.

The cultural values and norms of a people take a long time to change. For example, even though Ghana has witnessed (and continues to witness) significant social changes, the cultural norms and values of the people relative to patriarchy, and negative attitudes towards self-harm and suicidal behaviours remain largely entrenched (Kahn & Lester, 2013; Nukunya, 2016; Osafo et al., 2017; 2018). Also, Ghana's mental health system still requires basic legal and policy frameworks and structural changes, the absence of which has been attributed largely to lack of political will and commitment of government (Roberts et al., 2014; Walker & Osei, 2017; Zhou et al., 2018). To date, even though the Mental Health Act of Ghana was passed in 2012 (Act 846), the Legislative Instrument required to enforce the key stipulations of the law has not been passed by government (Walker & Osei, 2017).

Furthermore, although the suggestions related to awareness creation and public health education may require only minimal political support, embarking on public health education programmes may not necessarily translate into positive attitude and behavioural changes. As recommended by Kelly and Barker (2016), the development of such health promotion and public education programmes must be theory driven; the integration of recent psychological and social practice insights must be factored into the process.

Another useful but potentially challenging suggestion is screening adolescents periodically for self-harm tendencies, targeted at creating pro-mental health school and charity facility environment. While a carefully conducted universal screening of adolescents for self-harm risk can be useful for providing early intervention and preventive measures (e.g., Robinson et al., 2011; Walsh, 2006), the implementation of this suggestion in Ghana could be faced with multiple challenges. Firstly, such targeted screening could be problematic and inviable, as it could lead to increased stigma for adolescents who (are at risk of) self-harm, given the highly stigmatised nature of self-harm and suicidal behaviours in Ghana. Secondly, as can be said generally about sub-Saharan Africa, presently, there is no contextually validated screening tool for self-harm in Ghana; no widely used or accepted Western screening tool for self-harm in adolescents has been adapted and validated for research and clinical use in Ghana. The next potential challenge is related to the unavailability of child and adolescent (mental health) professionals working in schools and charity facilities to assess adolescents for self-harm risks. Where available, typically, a professional school counsellor in Ghana, for example, is over-burdened with the simultaneous overarching duties of teaching and offering emotional support to students and school staff. Presently, there are only nine educational psychologists, with no school psychologist in Ghana (Ghana

Psychological Council, 2019). More problematically, there are only two general psychiatrists with professional training in child and adolescent mental health in the country (Natala et al., 2018). The implication is that most schools and charity facilities across the country do not have an onsite child and adolescent mental health professional. Lastly and relatedly, evidence is emerging to suggest that, generally, teachers and school mental health professionals are less willing to work with persons experiencing elevated self-harm risk, because self-harm provokes negative emotions in these school professionals – e.g., shock, frustration, fear, anger, helplessness, and anxiety (Adamson & Peacock, 2007; Best, 2006, Brock & Reeves, 2018; Dowling & Doyle, 2017; Groth & Boccio, 2019; Miller & Jome, 2010). Perhaps, rather than periodic screening, providing in-service training on self-harm risk assessment and management could help improve and better prepare school and charity facility (mental) health professionals, teachers and social workers to provide continuous support for adolescent who (are at risk of) self-harm.

5.9. Recommendations for future research

In keeping with the global call and efforts towards the attainment of SDG 3.4.2[40] by the year 2030, scaling up further public (mental) health research in Ghana, like the present one, which translates into real-world effects is needed (Patel et al., 2018; Sustainable Development Solutions Network, 2018; UN Statistical Commission, 2016). The present study provides evidence, for the first time, on several factors associated with self-harm in adolescents in Ghana (e.g., non-heterosexual orientation, self-harm history, and exposure to the self-harm of significant others). Whereas further evidence from observational studies is needed, longitudinal research designs which allow for the measurement of key risk and protective factors across time would potentially offer a nuanced understanding of the risk factors associated with self-harm in adolescents in Ghana (Franklin et al., 2017). Here, adolescents within the community and school contexts who are identified to have self-harmed could be followed up over time to assess repetition and cessation of the behaviour. The mechanisms and factors (with their effect sizes) associated with the repetition and cessation of self-harm could be identified.

An assumption that seems to partly inform the views shared by the adult stakeholder participants in this study and the discussion of some portions of the findings of this thesis is that some adolescents who self-harm may be experiencing

[40] SDG 3.4.2 is targeted at reducing by one third premature mortality from suicide, by the year 2030 (UN Statistical Commission, 2016).

mental health problems. Whereas this assumption may receive some support in the literature (e.g., Cipriano et al., 2017; Hawton et al., 2012; NICE, 2012; Valencia-Agudo et al., 2018), the data collection approaches used in this thesis did not involve assessments or diagnoses of psychiatric disorders or mental health problems in the adolescent participants to yield evidence in support of this assumption. To provide empirical support for this assumption in Ghana, future studies on adolescent self-harm from Ghana may consider examining mental health related factors (e.g., depression, anxiety, self-esteem, perfectionism, alcohol and drug related disorders, personality disorders, trauma, and impulsivity) and include other relevant school-based factors related to teacher-student relationship and school climate, and factors within charity facilities attended by street-connected adolescents.

Globally, out-of-school adolescents are under-represented in self-harm and suicide research (Cheng et al., 2014; Gauvin et al., 2019; Yoder, 1999). This thesis has provided primary evidence on self-harm as reported by in-school and street-connected adolescents in Accra, Ghana. However, comparatively, the street-connected adolescents were not sufficiently representative of out-of-school adolescents. In Ghana (and across sub-Saharan Africa in general), there are still out-of-school adolescents who live in rural communities, urban households, and urban childcare institutions (e.g., orphanages, foster homes). Future studies could explore the self-harming behaviours of these other out-of-school adolescents. As evident in this thesis for example, such future studies are likely to show unique and shared concerns, circumstances and meanings related to self-harm in these diverse groups of adolescents, that could be helpful in designing and targeting intervention and prevention efforts.

In the present study, due to the relatively small sample size, the street-connected adolescents were treated as a homogenous group – a situation which might have blurred the potential discovery of significant differences among sub-groups within this sample. Future studies interested in out-of-school young people, including street-connected adolescents, should consider using larger sample size in order to facilitate sub-group analysis of data.

Homosexuality is criminalised in most sub-Saharan African countries including Ghana (Act 29 of Ghana, 1960; Global Legal Research Directorate, 2014), yet some young people still identify as non-heterosexuals. This thesis shows that, in Ghana (and within sub-Saharan Africa in general), adolescents who identify as non-heterosexuals are under-represented in self-harm research (Chapters 2, 3 & 4). Evidence from high-income contexts shows that, compared to the general

population of young people, adolescents with sexual orientation concerns and those who identify as sexual minority are at an elevated risk of self-harm and death by suicide (McDermott & Roen, 2016). Future studies on self-harm from sub-Saharan contexts could focus on this group of adolescents. Potentially, school-based and street-based sexual health education programmes could benefit from evidence of such future studies to help adolescents who have sexual orientation concerns.

Given the complex nature of self-harm (Leschied et al., 2018), it is recommended that future studies adopt robust qualitative approaches to explore the cultural and historical contexts, and the subjective experiences and various meanings that adolescents may have for their self-harm. Evidence from such studies have the potential to inform initial context-driven theoretical formulations of the behaviour in Ghana (Chandler, Myers & Platt, 2011; Hjelmeland, 2010, 2016; Hjelmeland & Knizek, 2010, 2011; White, Marsh, Kral, & Morris, 2016).

While the present study (Chapter 4) provides some preliminary qualitative findings from Ghana describing the attitudes and identifying some initial training needs of school staff (i.e., counsellors and teachers) in supporting adolescents who (are at risk of) self-harm, further studies are needed to complement this data. Future qualitative studies involving focus groups of teachers, school counsellors, school house masters and mistresses, school chaplains, and school nurses will provide much nuanced understanding of the phenomenon from the perspectives of school staff who are often the first point of contact for many students experiencing emotional problems.

Even though diversity was sought in the sampling of the adult stakeholders for this study, compared to the school and charity facility staff, parents were under-represented. Thus, considering the important role that parents and families play in the stopping and prevention of self-harm in adolescents, further studies involving parents whose adolescents have self-harmed and primary caregivers of self-harming adolescents are also needed (Curtis et al., 2018; Kelada et al., 2016; Hughes et al., 2017). This set of parents/primary caregivers can also be accessed in clinics and hospitals where families present their self-harming adolescents for care. The two parents involved in the present study had university education (Table 4.3), an indication that, relatively, they might be well-informed about self-harm. Additionally, although most of the school and charity facility staff involved in this study were parents themselves, they assumed the position of a teacher, counsellor or charity facility staff members in the interviews for this study. Thus, their views might not necessarily reflect the dominant views of the average Ghanaian parent who has, at most, a school-leaving certificate or no formal education at all –

particularly, mothers who remain entrenched in upholding traditional family norms and values in raising their children, even in the face of progressive social changes (Aziato, 2016; Adu-Yeboah & Forde, 2011).

Peers represent a key source of informal support for adolescents who (are at risk of) self-harm. However, analysis of the adolescents' views in the present study revealed mixed evidence that peers could be supportive or show negative reactions to adolescents who (are at risk of) self-harm. Perhaps future studies could consider examining the attitudes of peers of adolescents who self-harm in more detailed. Evidence from studies with this focus can provide potential directions for encouraging supportive attitudes among peers (e.g., Doyle, 2017).

An interesting observation in the present is that, overall, the participants' reference to the media as a risk factor for adolescent self-harm was related to television contents; the Internet and social media as sources of risks for and support against self-harm were largely missing in the narratives and views of the participants. This result could be due mainly to the fact that the interview protocol did not include key questions or probes related to Internet or social media use. Many street-connected and homeless young people tend to own mobile phones, however, most of these young people use the Internet less frequently compared to in-school young people (VonHoltz et al., 2018). Basic school pupils and second cycle education students in Ghana are not allowed to use electronic devices, particularly, mobile phones while in school. Even though some families buy mobile phones for their adolescent wards, mostly, parents and guardians do not allow their children under 18 years of age to own mobile phones, as the Ghana Education Service policy prohibits the use of mobile phones by students at the pre-tertiary level. However, in-school adolescents who do not own mobile phones patronise internet cafés within their communities when they are not in school or use their parents' or peers' mobile phones to access the Internet and various social media platforms (Alhassan, 2015; Burrell, 2009; Moot, 2017; Porter et al., 2016).

Recent studies from high income countries are showing that the use of the Internet and social media could be both a potential risk factor and a source of support and a mechanism of coping, prevention and intervention for self-harm in young people (Frost & Casey, 2016; Lewis & Seko, 2016; Robinson et al., 2016, 2018; Shanahan, Brennan & House, 2019; Williams et al., 2018). Given the recent increasing popularity of the Internet and social media among adolescents in Ghana (Asare-Donkoh, 2018; Mingle & Adams, 2015), future studies could begin to explore how the onset, maintenance and cessation of self-harm in adolescence may be

related to the usage of the Internet and social media among young people in the country.

An important finding of this thesis (Chapter 4) is that some adolescents find religious beliefs helpful in stopping self-harm. However, what the present study could not demonstrate is how religious beliefs influence the self-harm cessation and recovery process in adolescents. Given that Ghana is a highly religious country (GSS, 2013), it is recommended that future studies adopt qualitative approaches to explore adolescents' experiences of how their religious beliefs and practices are helpful in stopping self-harm. Evidence from such studies could inform strategies for exploiting the available religious resources towards self-harm intervention and prevention in the country.

Available evidence suggests that the meaning of self-harm and specific self-destructive acts and methods of self-harm are also influenced by the cultural context within which the behaviour occurs (e.g., Beautrais, 2000; Benjamin et al., 2018; Marecek, 2006; 1998). However, the systematic review of the literature (Chapter 2) showed that, across sub-Saharan Africa, researchers of adolescent self-harm have overly applied pre-existing Western derived models and measures. The implication is that, the findings of such studies may not necessarily be practically relevant to the African situation. In this thesis, the absence of any culturally derived measures necessitated the application of some Western derived measures. However, these were modified to suit the Ghanaian situation, and the definition of self-harm adopted (NICE, 2012) was not closed or strictly limited to only intentional acts of self-poisoning and self-injury but open to the inclusion of the meanings and methods of self-harm from the perspectives of the participants (Chapters 3 & 4). Future studies in the area from Ghana and other sub-Saharan African countries could consider the development and use of culturally sensitive measures and models, as this approach has the potential of improving the practical relevance and appreciation of our research findings. In Ghana, the qualitative evidence of this thesis (Chapter 4) could provide a useful basis for the development of context-relevant measures of self-harm among both in-school and out-of-school adolescents.

Lastly and relatedly, the analysis of this thesis attempts to isolate and differentiate the circumstances leading up to self-harm and the suggestions for prevention of the behaviour between in-school and street-connected adolescents. Thus, for the purposes of developing contextually relevant and culturally sensitive screening and assessment tools, future studies could consider quantitatively testing out in larger samples of adolescents the factors reported by the participants in this

study as precipitating their self-harm and facilitating the cessation or recovery from self-harm. Reliably and contextually validated screening and assessment tools could be useful for research and clinical practice in Ghana and other contextually similar sub-Saharan African settings.

5.10. Strengths and limitations of thesis

The specific strengths and limitations of each empirical study have been identified and discussed in each respective chapter (Chapter 2, 3 & 4). This section identifies the general strengths and limitations of the thesis. This thesis represents the first adolescent self-harm research that simultaneously includes both in-school and an out-of-school adolescent groups from a low- and middle-income country; it is also the first to synthesise the available and accessible evidence on adolescent self-harm across sub-Saharan Africa.

To date, available studies in the area from Ghana have focused on only attempted suicide among adolescents, with no qualitative studies exploring the lived experiences of adolescents regarding self-harm. This thesis contributes to addressing this knowledge gap by describing the prevalence estimates and associated factors and exploring adolescent participants' lived experiences and the views of key adult stakeholders regarding self-harm.

Generally, the use of a mixed methods approach allowed for complementing the strengths and weaknesses of both qualitative and quantitative research. Given the complex nature of self-harm and suicidal behaviours, several studies have recommended the use of mixed methods approaches to help expand the evidence base in the field (e.g., Hjelmeland, 2016; Hjelmeland & Knizek, 2010; Rogers & Apel, 2010). In this thesis, whilst the quantitative section (Chapter 3) provided statistical evidence on the prevalence estimates of self-harm in a relatively larger sample of adolescents, the qualitative section (Chapter 4) obtained exploratory evidence to explain self-harm as experienced by the adolescents and viewed by their adult stakeholders.

There is evidence to suggest non-disclosure of self-harming and suicidal behaviours among students (De Luca, Yan, Lytle & Brownson, 2014). Bearing this mind, in the primary studies of this thesis, participants were carefully informed about the study and assured of confidentiality and their right to withdrawal. However, owing to the stigmatised, tabooed and criminalised nature of self-harm and suicide in Ghana (Act 29, 1960; Osafo et al., 2015), it is possible that the participants in this research might have provided guarded and socially desirable responses.

Also, in the primary studies of this thesis, based on the choices of the participants, multiple languages (English, Ga, and Twi) were used to capture the thoughts and experiences, particularly, of the (street-connected) adolescents. English is the formal language of Ghana – each of the participants in this thesis had their own first language, depending on their ethnic group. This thesis sought the support of language experts and relied on the experiences of the data collection team to ensure the reliability and validity of the translation into English. However, given the strong relationship between experiences (including thoughts) and language of expression (Polkinghorne, 2005), it is possible that some meanings of the thoughts and experiences of some participants might have been lost to imprecise translation on the part of both the data collection team and the participants.

An important practical challenge in this thesis is the participant fatigue observed among the street-connected adolescents. Generally, the street-connected adolescents appeared tired and showed reduced concentration, even when they were approached during the weekends when many of them were not working. Although they have the 'freedom' to spend their time in any way they want, street-connected children and young people in Accra are mostly working, doing menial jobs to earn a living, with little rest/sleep during the working week. Thus, even though this practical challenge may not necessarily represent a bias in this thesis, it reflects the impact of the daily life situation of this group of young people on a research process. This practical challenge must be factored into designing and conducting future studies, particularly, studies using repeated approaches; surveys should consider using short versions of measures to avoid more missing data due to unanswered items; in interview studies, key questions should be asked first when participants have higher concentration.

Finally, the retrospective nature of the study might have created errors in the responses provided by the participants. For example, some of the adolescents had to recall their (last episode of) self-harm, which for some participants was up to four or more years prior to this research. This considerable time lag could potentially result in forgetting or distorted memories of the circumstances leading up to their self-harm and their emotional experiences at the time, or they might have modified the interpretation of their self-harm (Althubaiti, 2016; Gardner, 2001; Widom, 2019).

5.11. Conclusions

This research utilised a mixed methods approach to examine the phenomenon of self-harm among in-school and street-connected adolescents in Ghana. The available and accessible evidence on the prevalence and factors associated with

the behaviour within sub-Saharan Africa was also systematically reviewed. The findings showed that self-harm in both in-school and street-connected adolescents in Ghana is or should be a significant public concern as it is across other sub-Saharan African countries. Relatively, even though the prevalence estimates are higher among adolescents in school than street-connected adolescents, generally, intrapersonal, familial, and extrafamilial factors and reasons are associated with and reported for the behaviour. The participants' first-person accounts and meaning-making were elaborated more along the lines of social interactions with others, moral standards and familial relationships, with little emphasis on intrapersonal factors or individual level difficulties and mental states. The participants' suggestions for the prevention of self-harm in adolescents in Ghana were mostly related to universal prevention and stakeholder early intervention efforts. Generally, many of the findings of this thesis are not unusual; having family and other social relationship troubles, being isolated and unhappy, and self-harm in adolescents being given meanings mixed with psychological and social interpretations have been found in many other places in the world. Whilst this thesis contributes significantly to adolescent self-harm research, particularly, in Ghana and within sub-Saharan Africa, further studies of high methodological quality are recommended to expand the evidence base for the understanding, intervention and prevention of self-harm in adolescents in Ghana and within sub-Saharan Africa.

Key Points

What is already known about this topic

- Evidence on adolescent self-harm is mostly available from high-income countries, with sparse evidence from a few low- and middle-income countries.
- Globally, little is known about self-harm in homeless and street-connected adolescents, relative to in-school adolescents.
- In high-income countries, typically, 2 in 10 adolescents report self-harming within the past year.
- Adolescents simultaneously report intrapersonal and interpersonal reasons for their self-harm; no single reason is necessary or sufficient for self-harm in adolescent.
- Self-cutting is mostly reported by community samples of adolescents, while self-poisoning is often reported by clinic-based adolescent samples.
- Cumulative exposure to intrapersonal factors and factors within the family and extra-familial contexts (such peer groups, school, and neighbourhood) are associated with adolescent self-harm.
- Self-harm can be a complex experience for adolescents to talk about in simple articulate terms.

What this thesis adds

- This thesis is the first to systematically synthesise the available and accessible literature on self-harm in adolescents across countries within sub-Saharan Africa and concludes that considerable variability exists in the prevalence estimates of adolescent self-harm across the subregion, although the available median estimates are comparable to estimates reported from high-income countries.
- In sub-Saharan Africa, community samples of adolescents mostly report self-cutting, while self-poisoning is often reported by clinic-based adolescent samples.
- Even though, generally, intrapersonal, familial, and extrafamilial factors and reasons are associated with and reported for adolescent self-harm, comparatively, the prevalence estimates of self-harm are lower in street-connected adolescents than in-school adolescents in Ghana.
- In Ghana, both in-school and street-connected adolescents show some difficulty in talking about their self-harm experiences; generally, the adolescents' first-person accounts and meaning-making are articulated more along the lines of social interactions with others, moral standards and familial relationships, with little emphasis on individual level difficulties and mental states.

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Appendices

Appendix 1

Appendix 1.1: Ethics Approval by the School of Psychology Ethics Committee, University of Leeds, UK.

UNIVERSITY OF LEEDS RESEARCH ETHICS COMMITTEE

UNIVERSITY OF LEEDS

Faculty of Medicine and Health
Institute of Psychology Research Ethics Committee
University of Leeds
Leeds LS2 9JT, UK
Ethics.Committee@webhost02h.leeds.ac.uk
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

Mitch Waterman
Institute of Psychological Sciences (IPS)
University of Leeds
Leeds LS2 9JT

06-Dec-2016

Dear Mitch Waterman

Ethics Form Decision

Title of study: **Self-Harm in Adolescents in Ghana**

Ethics reference: **16-0373**

I am pleased to inform you that the above research application has been reviewed by the IPS Research Ethics Committee and has been approved.

Please note that this approval only relates to the particular version of documentation supplied in this specific application (ref no: **16-0373**; date approved: **06-Dec-2016**). If you wish to make any amendments to the approved documentation, please note that all changes require ethical approval prior to implementation.

Please note: You are expected to keep a record of all your approved documentation, as well as documents such as sample consent forms, and other documents relating to the study. This should be kept in your study file, which should be readily available for audit purposes.

You will be given a two week notice period if your project is to be audited. There is a checklist listing examples of documents to be kept which is available at http://ris.leeds.ac.uk/EthicsAudits

Yours sincerely,

IPS Research Ethics Committee
(Chair: Donna Lloyd)

Appendix 1.2: Ethics Approval by the Ethics Committee for the Humanities, University of Ghana, Accra.

UNIVERSITY OF GHANA
ETHICS COMMITTEE FOR THE HUMANITIES (ECH)

P. O. Box LG 74, Legon, Accra, Ghana

My Ref. No.....

18th January, 2017

Mr. Emmanuel Nii-Boye Quarshie
School of Psychology
University of Leeds
United Kingdom

Dear Mr. Quarshie,

ECH 078/16-17: SELF -HARM IN ADOLESCENTS IN GHANA

This is to advise you that the above reference study has been presented to the Ethics Committee for the Humanities for an expedited review and the following actions taken subject to the conditions and explanation provided below:

Expiry Date:	17/01/18
On Agenda for:	Initial Submission
Date of Submission:	12/12/16
ECH Action:	Approved
Reporting:	Bi-Annually

UG/ISSER/ECH VALID UNTIL 17 JAN 2018 APPROVED DOCUMENT

Please accept my congratulations.

Yours Sincerely,

Rev. Prof. J. O. Y. Mante
ECH Chair

Tel: +233-303933866 Email: ech@ug.edu.gh | ech@isser.edu.gh

Appendix 1.3: Permission by the Ghana Education Service (GES), Greater Accra regional Office – Accra, Ghana.

GHANA EDUCATION SERVICE

In case of reply the
Number and date of this
Letter should be quoted

My Ref: **GES/GAR/SS51358**
Your Ref .....
E-MAIL: gesgar09@yahoo.com

REPUBLIC OF GHANA

REGIONAL EDUCATION OFFICE
P. O. BOX M.148
ACCRA

9TH JANUARY, 2017

MR EMMANUEL NII-BOYE QUARSHIE
PRIMARY RESEARCHER
DOCTORAL RESEARCH STUDENT

RE: PERMISSION TO CONDUCT SURVEY AND INTERVIEWS ON 'SELF-HARM IN ADOLESCENTS IN GHANA IN SELECTED SECOND CYCLE SCHOOLS IN ACCRA

With reference to your request above, you are by this letter informed that permission has been given to you to conduct your survey and interview students between the ages of 13 and 19 in second cycle schools within Greater Accra.

You are to make personal contacts with Heads of the sampled schools and arrange on convenient times for a successful survey and interviews.

Thank you.

PETER ATTAFUAH (Ph D)
DIRECTOR OF EDUCATION
GREATER ACCRA REGION

Cc: The Regional Chairman, CHASS, Tema Senior High School, Tema.

Appendix 1.3 (continued).

GHANA EDUCATION SERVICE

In case of reply the
Number and date of this
Letter should be quoted

My Ref: **GES/GAR/SS51358**
Your Ref .....
E-MAIL: gesgar09@yahoo.com

REPUBLIC OF GHANA

REGIONAL EDUCATION OFFICE
P. O. BOX M.148
ACCRA

9TH JANUARY, 2017

DISTRIBUTION

ALL HEADS OF SECOND CYCLE SCHOOLS-GAR

PERMISSION TO CONDUCT SURVEY AND INTERVIEWS ON 'SELF-HARM IN ADOLESCENTS IN GHANA' IN SELECTED SECOND CYCLE SCHOOLS IN ACCRA

Permission has been given to Mr. Emmanuel Nii-Boye Quarshie, a Doctoral Research Student of the University of Leeds (School of Psychology-Faculty of Medicine and Health) to conduct a survey and interview students between the ages of 13 and 19 in second cycle schools.

You are kindly requested to give him all the necessary assistance to make his survey and interviews a success.

Thank you.

PETER ATTAFUAH (Ph D)
DIRECTOR OF EDUCATION
GREATER ACCRA REGION

Cc: Mr. Emmanuel Nii-Boye Quarshie, Doctoral student, University of Leeds.

Appendix 1.4: Permission by the Department of Social Welfare (DSW), Head Office Accra.

In case of reply the Number and date of this Letter should be quoted

Our Ref. No. A345
Your Ref. No: ... .

REPUBLIC OF GHANA

Department of Social Welfare
Post Office BoxMB. 230
ACCRA-GHANA

Tel: -+233 0302 684536
Fax +233 0302 663615

E-Mail:- dsocwel@yahoo.com

18th January, 2017

MR EMMANUEL NII-BOYE QUARSHIE
PRIMARY RESEARCHER
DOCTORIAL RESEARCH STUDENT

RE: PERMISSION TO CONDUCT SURVEY AND INTERVIEW ON 'SELF-HARM IN ADOLESCENTS IN GHANA' IN SELECTED RESIDENTIAL HOMES FOR CHILDREN

Your letter dated 27th December, 2016 refers:

Permission is granted you to conduct the survey and interview in the Greater Accra region.

You are to make personal contacts with Managers of the sampled Residential Homes for children.

Thank you.

BENJAMIN A. OTOO
AG. DIRECTOR

Appendix 1.4 (continued).

In case of reply the Number and date of this Letter should be quoted

Our Ref. No: A845
Your Ref. No: ... .

REPUBLIC OF GHANA

Department of Social Welfare
Post Office BoxMB. 230
ACCRA-GHANA

Tel: -+233 0302 684536
Fax +233 0302 663615

E-Mail:- dsocwel@yahoo.com

18th January, 2017

DISTRIBUTION

ALL MANAGERS/PROPRIETORS
RESIDENTIAL HOMES FOR CHILDREN
GREATER ACCRA REGION

PERMISSION TO CONDUCT SURVEY AND INTERVIEW ON 'SELF-HARM IN ADOLESCENTS IN GHANA' IN SELECTED RESIDENTIAL HOMES FOR CHILDREN

Permission has been given to Mr. Emmanuel Nii-Boye Quarshie, a Doctoral Research Student of the University of Leeds (School of Psychology-Faculty of Medicine and Health) to conduct a survey and interview on adolescents in Residential Homes for Children.

You are kindly requested to give him all the necessary assistance to make his survey and interview a success.

Thank you.

BENJAMIN A. OTOO
AG. DIRECTOR

Appendix 2

Appendix 2.1: List of countries in Sub-Saharan Africa[41] included in review

№	Country	№	Country
1.	Angola	24.	Lesotho
2.	Benin	25.	Liberia
3.	Botswana	26.	Madagascar
4.	Burkina Faso	27.	Malawi
5.	Burundi	28.	Mali
6.	Cabo Verde	29.	Mauritania
7.	Cameroon	30.	Mauritius
8.	Central African Republic	31.	Mozambique
9.	Chad	32.	Namibia
10.	Comoros	33.	Niger
11.	Congo	34.	Nigeria
12.	Democratic Republic of the Congo	35.	Rwanda
13.	Côte d'Ivoire	36.	São Tomé and Príncipe
14.	Equatorial Guinea	37.	Senegal
15.	Eritrea	38.	Seychelles
16.	eSwatini/Swaziland	39.	Sierra Leone
17.	Ethiopia	40.	South Africa
18.	Gabon	41.	South Sudan
19.	Gambia	42.	United Republic of Tanzania
20.	Ghana	43.	Togo
21.	Guinea	44.	Uganda
22.	Guinea-Bissau	45	Zambia
23.	Kenya	46.	Zimbabwe

[41] The list of countries in sub-Saharan Africa considered for this review is based on the regional classification and list of 46 countries within the region provided by the United Nations Development Programme (UNDP, 2016, p. 269; UNDP, 2018, p. 108) and the World Health Organization (WHO, 2014a, p. 88).

Appendix 2.2. Completed PRISMA Checklist for Systematic Review (Chapter 2)

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	58
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	NA
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	58
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	59
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	61-62
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	65-69
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	62-64
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appx. 2.6
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	65
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	65-69

Appendix 2.2 (continued)

Section/topic	#	Checklist item	Reported on page #
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	65-69
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	70
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	NA
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	NA
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	70
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	NA
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	71-72
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	71-80
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	80
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	81-120
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	NA
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	80

Appendix 2.2 (continued)

Section/topic	#	Checklist item	Reported on page #
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	NA
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	121-135
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	135-141
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	142
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	III

From: Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine, 6(7)*, e1000097. DOI: 10.1371/journal.pmed.1000097.

Appendix 2.3: Keywords used in literature search

"Self-harm" keywords	**"Adolescents" keywords**
Antisuicide	Adolescents
Attempted suicide	High school students
Deliberate self-harm	Homeless adolescents
Delicate self-cutting	Homeless youth
Hair pulling	In-school adolescents
Head banging	In-street adolescents
Nonsuicidal self-injury	School children
Overdose	Secondary school pupils
Parasuicide	Secondary school students
Partial suicide	Senior high school students
Self-asphyxiation	Street adolescents
Self-burning	Street children
Self-cutting	Street connected youth
Self-destruction	Street youth
Self-destructive behaviour	Teenagers
Self-harm	Teens
Self-harming behaviour	Young adults
Self-hitting	Youth
Self-injury	
Self-injurious behaviour	
Self-killing	
Self-laceration	
Self-mutilation	
Self-poisoning	
Suicide	
Wrist-cutting syndrome	
Wrist-slashing	

Appendix 2.4. Official Subject Headings

Database	Term	MeSH / Official subject heading
MEDLINE:	**Self-harm:**	Self-injurious behaviour
		Suicide, attempted
		Suicide
		Suicide ideation
		Self mutilation
	Suicide:	Suicide
		Suicide ideation
		Suicide, attempted
	Adolescents:	Adolescent
		Child
PsycINFO:	**Self-harm:**	Suicide
		Attempted suicide
		Parasuicide
		Suicide ideation
		Self-injurious behavior
		Head banging
		Self-inflicted wounds
		Self-mutilation
		Self-destructive behavior
	Suicide:	Suicide
		Self-destructive behavior
		Attempted suicide
		Suicide ideation
	Adolescents:	Adolescent fathers
		Adolescent mothers
PubMed	**Self-harm:**	Self-injurious behaviour
	Suicide:	Suicide
	Adolescents:	Adolescent

Appendix 2.5
List of Sub-Saharan African countries and regional search terms

Angola	Namibia OR “South-West Africa”
Benin OR Dahomey	Niger
Botswana OR Bechuanaland	Nigeria
“Burkina Faso” OR “Upper Volta”	Rwanda OR Ruanda
Burundi OR Urundi	“Sao Tome and Principe”
Cameroon	Senegal
“Cape Verde” OR “Cabo Verde”	Seychelles
“Central African Republic”	“Sierra Leone”
Chad	Somalia
Comoros	“South Africa”
Congo	“South Sudan”
“Cote d'Ivoire” OR “Ivory Coast”	Swaziland OR eSwatini
“Democratic Republic of the Congo” OR Zaire	“United republic of Tanzania” OR Tanganyika OR Zanzibar
“Equatorial Guinea”	Togo
Eritrea	Uganda
Ethiopia OR Abyssinia	Zambia OR “Northern Rhodesia”
Gabon	Zimbabwe OR “Southern Rhodesia”
Gambia	“German East Africa”
Ghana OR “Gold Coast”	“Western Sahara”
Guinea	“Central Africa”
Guinea-Bissau	“Africa South of the Sahara”
Kenya	“West Africa”
Lesotho OR Basutoland	“Western Africa”
Liberia	“East Africa”
Madagascar	“Eastern Africa”
Malawi	“Southern Africa”
Mali OR “Sudanese republic”	“sub-Saharan Africa”
Mauritius	“subSaharan Africa”
Mozambique	

Appendix 2.6: Search Strategies

Appendix 2.6.1. Ovid MELINE(R) [updated search performed on January 10, 2019]

#	Query	Hits
1	Self-harm OR self harm OR Self-harming behav*	3863
2	Suicide, Attempted/ OR Self-injurious behave*/ OR Suicide/ OR Self Mutilation/ OR self-mutilation	53995
3	Suicide ideation/	5253
4	(Deliberate self-harm OR Delicate self-cutting OR Hair pulling OR Head banging OR Nonsuicidal self-injury OR Overdose OR Parasuicide OR Partial suicide OR Self-asphyxiation OR Self-burning OR Self-cutting OR Self-destruction OR Self-destructive behaviour OR Self-hitting OR Self-killing OR Self-laceration OR Self-poisoning OR Trichotillomania OR Wrist-cutting syndrome OR Wrist-slashing OR Non-fatal suicidal behav* OR Suicidal self-directed violence OR Non-suicidal self-directed violence OR Intentional self-harm).tw	18555
5	Drug overdose OR medication overdose OR Overdose.mp	18096
6	Antisuicid*.tw	81
7	Self-injur*.tw	3444
8	Suicid*.tw	61465
9	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8	98652
10	Adolescent/	1904124
11	(Street adj3 child*).tw	563
12	(Street adj3 adolescen*).tw	55
13	(Street adj3 youth).tw	311
14	(rural adj3 child*).tw	5012
15	(urban child* OR urban adolescen* OR urban teens OR urban youth).tw	2490
16	school child*.tw	19483
17	(High school students OR secondary school students).tw	8925
18	(Homeless adolescen* OR homeless child* OR homeless youth).tw	600
19	(teenager* OR teen OR teens OR youth).tw	63883
20	(Orphans OR institutionalised children OR institutionalised children OR foster children OR children in residential care).tw	1670
21	Young adult/	709120
22	(out-of-school child* OR out-of-school youth OR child* in especially difficult circumstance).tw	121
23	(street-connected young people OR street-connected children and young people OR street-connected children and youth OR street-connected children and adolescents OR child* with street connections OR child* in street situations OR child* working on the street OR child* living on the street).tw	7
24	10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23	2257506
25	9 AND 24	29502
26	Africa South of the Sahara.mp. or exp "Africa South of the Sahara"/	189538
27	(Angola OR Benin OR Dahomey OR Botswana OR Bechuanaland OR Burkina Faso OR Upper Volta OR Burundi OR Urundi OR Cameroon OR Cape Verde OR Cabo Verde OR Central African Republic OR Chad OR Comoros OR Congo OR Cote d'Ivoire OR Ivory Coast OR Democratic Republic of the Congo OR Zaire OR Equatorial Guinea OR Eritrea OR Ethiopia OR Abyssinia OR Gabon OR Gambia OR Ghana OR “Gold Coast” OR Guinea OR Guinea-Bissau OR Kenya OR Lesotho OR Basutoland OR Liberia OR Madagascar OR Malawi OR Mali OR Sudanese republic OR Mauritius OR Mozambique OR Namibia OR South-West Africa OR Niger OR Nigeria OR Rwanda OR Ruanda OR Sao Tome and Principe OR Senegal OR Seychelles OR Sierra Leone OR Somalia OR South Africa OR South Sudan OR eSwatini OR Swaziland OR United Republic of Tanzania OR Tanganyika OR Zanzibar OR Togo OR Uganda OR Zambia OR Northern Rhodesia OR Zimbabwe OR Southern Rhodesia OR German East Africa OR Western Sahara OR Central Africa OR Africa South of the Sahara OR West Africa OR Western Africa OR East Africa OR Eastern Africa OR Southern Africa OR sub-Saharan Africa OR subSaharan Africa).tw	76166
28	26 OR 27	206248
29	25 AND 28	500
30	limit 29 to English language	476
31	limit 30 to yr=1950-2018	476

Appendix 2.6.2. PsycINFO [updated search performed on January 10, 2019]

#	Query	Hits
1	Self-harm OR self harm OR Self-harming behav*	5405
2	Suicide, Attempted/ OR Self-injurious behave*/ OR Suicide/ OR Self Mutilation/ OR self-mutilation	33215
3	Suicide ideation/	9338
4	(Deliberate self-harm OR Delicate self-cutting OR Hair pulling OR Head banging OR Nonsuicidal self-injury OR Overdose OR Parasuicide OR Partial suicide OR Self-asphyxiation OR Self-burning OR Self-cutting OR Self-destruction OR Self-destructive behaviour OR Self-hitting OR Self-killing OR Self-laceration OR Self-poisoning OR Trichotillomania OR Wrist-cutting syndrome OR Wrist-slashing OR Non-fatal suicidal behav* OR Suicidal self-directed violence OR Non-suicidal self-directed violence OR Intentional self-harm).tw	8376
5	Drug overdose OR medication overdose OR Overdose.mp	3424
6	Antisuicid*.tw	113
7	Self-injur*.tw	5943
8	Suicid*.tw	60410
9	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8	72003
10	Adolescent.mp	154000
11	(Street adj3 child*).tw	603
12	(Street adj3 adolescen*).tw	127
13	(Street adj3 youth).tw	502
14	(rural adj3 child*).tw	2008
15	(urban child* OR urban adolescen* OR urban teens OR urban youth).tw	2733
16	school child*.tw	17067
17	(High school students OR secondary school students).tw	34694
18	(Homeless adolescen* OR homeless child* OR homeless youth).tw	1245
19	(teenager* OR teen OR teens OR youth).tw	97564
20	(Orphans OR institutionalised children OR institutionalised children OR foster children OR children in residential care).tw	2524
21	Young adult.mp	13447
22	(out-of-school child* OR out-of-school youth OR child* in especially difficult circumstance).tw	98
23	(street-connected young people OR street-connected children and young people OR street-connected children and youth OR street-connected children and adolescents OR child* with street connections OR child* in street situations OR child* working on the street OR child* living on the street).tw	10
24	10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23	274056
25	9 AND 24	11594
26	Africa South of the Sahara.mp	25
27	(Angola OR Benin OR Dahomey OR Botswana OR Bechuanaland OR Burkina Faso OR Upper Volta OR Burundi OR Urundi OR Cameroon OR Cape Verde OR Cabo Verde OR Central African Republic OR Chad OR Comoros OR Congo OR Cote d'Ivoire OR Ivory Coast OR Democratic Republic of the Congo OR Zaire OR Equatorial Guinea OR Eritrea OR Ethiopia OR Abyssinia OR Gabon OR Gambia OR Ghana OR “Gold Coast” OR Guinea OR Guinea-Bissau OR Kenya OR Lesotho OR Basutoland OR Liberia OR Madagascar OR Malawi OR Mali OR Sudanese republic OR Mauritius OR Mozambique OR Namibia OR South-West Africa OR Niger OR Nigeria OR Rwanda OR Ruanda OR Sao Tome and Principe OR Senegal OR Seychelles OR Sierra Leone OR Somalia OR South Africa OR South Sudan OR eSwatini OR Swaziland OR United Republic of Tanzania OR Tanganyika OR Zanzibar OR Togo OR Uganda OR Zambia OR Northern Rhodesia OR Zimbabwe OR Southern Rhodesia OR German East Africa OR Western Sahara OR Central Africa OR Africa South of the Sahara OR West Africa OR Western Africa OR East Africa OR Eastern Africa OR Southern Africa OR sub-Saharan Africa OR subSaharan Africa).tw	20787
28	26 OR 27	20787
29	25 AND 28	83
30	limit 29 to English language	82
31	limit 30 to yr=1950-2018	82

Appendix 2.6.3. PubMed [updated search performed on January 10, 2019]

Search	Query	Hits
# 1	Antisuicid* OR Attempted suicide OR Deliberate self-harm OR Delicate self-cutting OR Hair pulling OR Head banging OR Nonsuicidal self-injury OR Overdose OR Parasuicide OR Partial suicide OR Self-asphyxiation OR Self-burning OR Self-cutting OR Self-destruct* OR Self-harm* OR Self-hitting OR Self-injur* OR Self-killing OR Self-laceration OR Self-mutilation OR Self-poisoning OR Suicid* OR Trichotillomania OR wrist-cutting OR Wrist-cutting syndrome OR Wrist-slashing OR self harm OR Self-harming behav* OR “self mutilation” OR Non-fatal suicidal behav* OR “Suicidal self-directed violence” OR “Non-suicidal self-directed violence” OR “Intentional self-harm” OR Self-injurious behav*	120756
# 2	Adolescen* OR Child* OR Students OR Teen* OR “Young adults” OR youth OR Orphans OR institutionalised children OR institutionalised children OR foster children OR children in residential care OR out-of-school child* OR out-of-school youth OR child* in especially difficult circumstance OR street-connected young people OR street-connected children and young people OR street-connected children and youth OR street-connected children and adolescents OR child* with street connections OR child* in street situations OR child* working on the street OR child* living on the street OR “High school students” OR “secondary school students”	12453
# 3	Angola OR Benin OR Dahomey OR Botswana OR Bechuanaland OR Burkina Faso OR Upper Volta OR Burundi OR Urundi OR Cameroon OR Cape Verde OR Cabo Verde OR Central African Republic OR Chad OR Comoros OR Congo OR Cote d'Ivoire OR Ivory Coast OR Democratic Republic of the Congo OR Zaire OR Equatorial Guinea OR Eritrea OR Ethiopia OR Abyssinia OR Gabon OR Gambia OR Ghana OR “Gold Coast” OR Guinea OR Guinea-Bissau OR Kenya OR Lesotho OR Basutoland OR Liberia OR Madagascar OR Malawi OR Mali OR Sudanese republic OR Mauritius OR Mozambique OR Namibia OR South-West Africa OR Niger OR Nigeria OR Rwanda OR Ruanda OR Sao Tome and Principe OR Senegal OR Seychelles OR Sierra Leone OR Somalia OR South Africa OR South Sudan OR eSwatini OR Swaziland OR United Republic of Tanzania OR Tanganyika OR Zanzibar OR Togo OR Uganda OR Zambia OR Northern Rhodesia OR Zimbabwe OR Southern Rhodesia OR German East Africa OR Western Sahara OR Central Africa OR Africa South of the Sahara OR West Africa OR Western Africa OR East Africa OR Eastern Africa OR Southern Africa OR sub-Saharan Africa OR subSaharan Africa	518657
# 4	# 1 AND # 2 AND # 3	35
# 5	Filters activated: Publication date from 1950/01/01 to 2018/12/31, Humans, English, Female, Male, Child: 6-12 years, Adolescent: 13-18 years, Adult: 19+ years, Young Adult: 19-24 years, Adult: 19-44 years	29

Appendix 2.6.4. African Journals OnLine (AJOL) search strategy

"Advanced search within all journals" (hosted up to December 2018) using the keywords below [updated search performed on January 10, 2019]:

Search	Query	Hits
# 1	self-harm OR self harm OR deliberate self-harm	23
# 2	self-injury OR nonsuicidial self-injury OR self-cutting OR self-mutilation OR self-directed violence	500
# 3	suicide OR attempted suicide OR suicide attempt OR non-fatal suicidal behaviour	16
# 4	parasuicide OR self-poisoning OR overdose	57
# 5	self-burning OR self-immolation OR self-laceration	4
	Total:	600

Appendix 2.6.5. African Index Medicus (AIM) search strategy

Title and keyword search using the combination of the keywords below [updated search performed on January 10, 2019]:

Search	Query	Hits
# 1	self-harm OR self harm OR deliberate self-harm OR self-injury OR nonsuicidial self-injury OR self-cutting OR self-mutilation OR self-directed violence OR suicide OR attempted suicide OR suicide attempt OR non-fatal suicidal behaviour OR parasuicide OR self-poisoning OR overdose OR self-burning OR self-immolation OR self-laceration	8117

Appendix 2.7. Authors/researchers contacted for additional studies

Author / Researcher	Contact
Prof. Heidi Marie Hjelmeland	**Institution:** Department of Mental Health, Faculty of Medicine and Health Sciences, Norwegian University of Science and Technology **Email:** heidi.hjelmeland@ntnu.no **URL:** https://www.ntnu.edu/employees/heidi.hjelmeland
Prof. Eugene Kinyanda	**Institution:** MRC/UVRI Uganda Research Unit on AIDS **Email:** Eugene.Kinyanda@mrcuganda.org **URL:** http://www.mrcuganda.org/staff/professor-eugene-kinyanda
Prof. Birthe Loa Knizek	**Institution:** Department of Mental Health, Faculty of Medicine and Health Sciences, Norwegian University of Science and Technology **Email:** birthe.l.knizek@ntnu.no **URL:** http://www.ntnu.edu/employees/birthe.l.knizek
Prof. Stephanie Burrows	**Institution: Technical Officer,** WHO Department for the Management of Noncommunicable Diseases, Disability, Violence and Injury Prevention (NVI) **Email:** burrowss@who.int **URL:** http://www.who.int/ncds/management/burrows/en/
Prof. Charity Sylvia Akotia	**Institution:** Department of Psychology, School of Social Sciences University of Ghana, Legon. **Email:** sakotia@ug.edu.gh **URL:** http://www.ug.edu.gh/psychology/staff/charity-sylvia-akotia-0
Prof Derege Kebede	**Institution:** Johns Hopkins Bloomberg School of Public Health **Email:** dkebede1@jhu.edu **URL:** https://www.jhsph.edu/faculty/directory/profile/3362/derege-kebede
Dr. Atalay Alem	**Institution:** Department of Psychiatry, University of Toronto **Email:** atalay.alem@gmail.com **URL:** http://www.psychiatry.utoronto.ca/people/dr-atalay-alem/
Prof Anthony Lingum Pillay	**Institution:** Department of Behavioural Medicine, University of Kwazulu-Natal, South Africa **Email:** anthony.pillay@kznhealth.gov.za **URL:** http://behavmed.ukzn.ac.za/Staff/ProfessorAnthonyLPillay.aspx
Prof Douglas R. Wassenaar	**Institution:** School of Applied Human Sciences, University of Kwazulu-Natal, South Africa **Email:** wassenaar@ukzn.ac.za **URL:** http://sahs.ukzn.ac.za/staff-profile/psychology/douglas-r-wassenaar.aspx
Prof Olayinka Olusola Omigbodun	**Institution:** College of Medicine, University of Ibadan, Nigeria **Email:** olayinka.omigbodun@gmail.com **URL:** http://com.ui.edu.ng/index.php/prof-olayinka-o-omigbodun
Prof Lauren G. Wild	**Institution:** Department of Psychology, University of Cape Town, South Africa **Email:** Lauren.Wild@uct.ac.za **URL:** http://www.psychology.uct.ac.za/psy/staff/seniorlecturers/laurenwild
Prof Monica Haavisto Swahn	**Institution:** School of Public Health, Georgia State University, Atlanta **Email:** mswahn@gsu.edu **URL:** http://publichealth.gsu.edu/profile/monica-swahn/
Dr. Kwaku Oppong Asante	**Institution:** Department of Psychology, University of Ghana, Accra. **Email:** koppongasante@ug.edu.gh **URL:** https://www.researchgate.net/profile/Kwaku_Oppong_Asante
Prof Joseph Osafo	**Institution:** Department of Psychology, University of Ghana, Accra. **Email:** josafo@ug.edu.gh **URL:** http://www.ug.edu.gh/psychology/staff/joseph-osafo
Prof Lewis Aptekar	Institution: College of Education, San Jose State University, San Jose, California. Email: lewis.aptekar@sjsu.edu URL: http://www.sjsu.edu/faculty/laptekar/
Prof. Tatek Abebe	**Institution:** Department of Education and lifelong learning, Norwegian University of Science and Technology, Trondheim, Norway **Email:** tatek.abebe@ntnu.no **URL:** https://www.ntnu.edu/employees/abebe
Dr. Tigest Ketsela Mengestu	**Institution:** WHO Representative – Country office, Swaziland. **Email:** ketselat@who.int **URL:** http://sz.one.un.org/content/unct/swaziland/en/home/agencies/who.html
Prof Alan J. Flisher Centre for Public Mental Health	**Institution:** Prof Alan J. Flisher Centre for Public Mental Health, South Africa **Email:** gillian.hanslo@uct.ac.za // skeen@sun.ac.za **URL:** http://www.cpmh.org.za/
Dr. Jason Bantjes	**Institution:** Department of Psychology, Stellenbosch University, South Africa **Email:** jbantjes@sun.ac.za **URL:** https://www.sun.ac.za/english/faculty/arts/psychology/staff/academic-staff
Dr. Hilda N. Shilubane	**Institution:** Department of Advanced Nursing Science, University of Venda, South Africa. **Email:** hilda.shilubane@univen.ac.za **URL:** http://www.univen.ac.za/school-of-health-sciences/advanced-nursing-science/

Appendix 2.8. Extraction Forms/Tables

Appendix 2.8.1. Prevalence Estimates of Self-harm (by year of publication)

Author(s) (year)	Country	Terminology		Sample				Data Source	Case finding / Assessment	Lifetime Prevalence [Female-Male ratio (%)]	12-Month Prevalence [Female-Male ratio (%)]	6-Month Prevalence [Female-Male ratio (%)]	Study quality
		Term	Definition	Study setting & Population	Size	Age range	Gender						

Appendix 2.8.2. Predominant Method of Self-harm by year of publication

Author(s) (year)	Country	Form of Self-harm	Sample				Case finding / Assessment	Predominant method (%) [Female-Male ratio (%)]			Study quality
			Study setting, Design & Population	Size	Age range	Gender		Self-Poisoning	Self-Injury	Other	

Appendix 2.8.3. Correlates, Risk and Protective Factors of Self-Harm (by year of publication)

Author(s) (year)	Country	Form of Self-harm	Data Source	Risk Factors					Protective Factors					Study quality
				Personal	Family	School	Interpersonal	Other	Personal	Family	School	Interpersonal	Other	

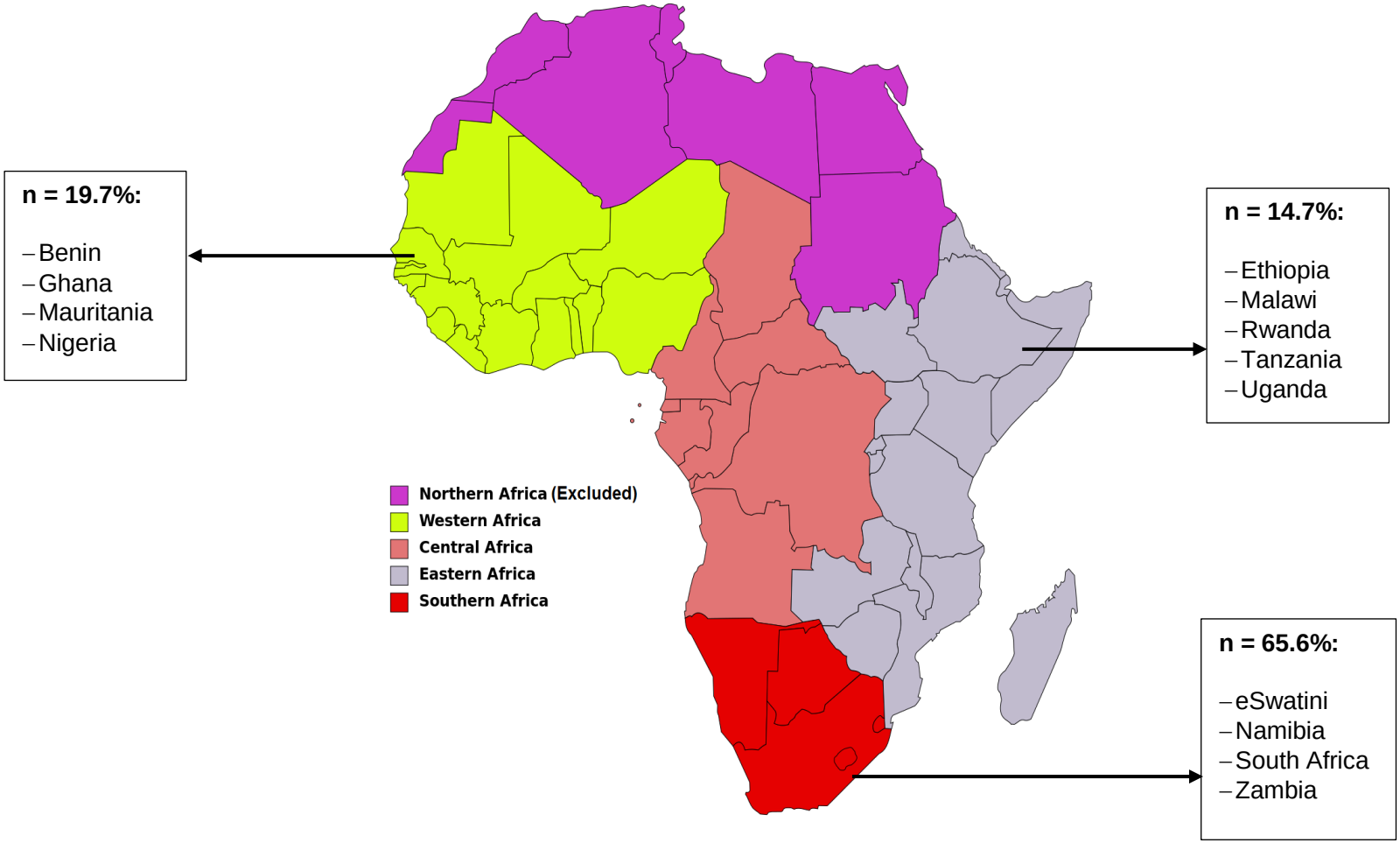
Appendix 2.8.4. Reasons for Self-Harm (by Year of Publication)

Author(s) (year)	Country	Form of Self-harm	Study setting, Population & Design	Sample			intention			Study quality
				Size	Age range	Gender	Intrapersonal	Interpersonal	Other (%)	

Appendix 2.9. Included records and their sources

Record	Category	n (%)	Author(s)
Global school-based student health survey	National report	1 (1.8)	Nyandindi (2017)
Postgraduate theses	Master's theses	6 (10.5)	Campbell (2012); Lippi (2014); Nanewortor (2011); Pretorius (2011); Sommer (2005); van Rooyen (2013)
Peer-reviewed published papers	Book chapter	1 (1.8)	Sefa-Dedeh, & Canetto (1992)
	Indexed academic journal articles	49 (85.9)	Amare et al. (2018); Asante et al. (2017); Asante, & Meyer-Weitz (2017); Baiden et al. (2018); Beekrum et al. (2011); Cheng et al. (2014); Chinawa et al. (2014); Cluver et al. (2015); Cummins, & Allwood (1984); Fine et al. (2012); Flisher et al. (1993, 2006); Gage (2013); James et al. (2017); Kebede, & Ketsela, (1993); Khuzwayo et al. (2018); Kinyanda et al. (2011); Liu et al. (2018); Madu, & Matla (2003, 2004); Mashego, & Madu (2009); Meissner & Bantjes (2017); Mhlongo, & Peltzer (1999); Muula et al. (2013); Ng et al. (2015); Ogon, & Etuk (2007); Omigbodun et al. (2008); Peltzer (2008); Peltzer et al. (2000); Penning, & Collings (2014); Pillay (1987, 1988); Pillay, & Wassenaar (1991, 1997); Randall et al. (2014); Schlebusch (1985); Shaikh et al. (2016); Shiferaw et al. (2006); Shilubane et al. (2012, 2013, 2014); Stansfeld et al. (2017); Swahn et al. (2012); van der Wal, & George (2018); van der Walt (2016); van Niekerk et al. (2012); Vawda (2012); Wassenaar et al. (1998); Wild et al. (2004).
–	Total	57 (100)	–

Appendix 2.10: Sub-regions of sub-Saharan Africa with data for the 57 studies included in review

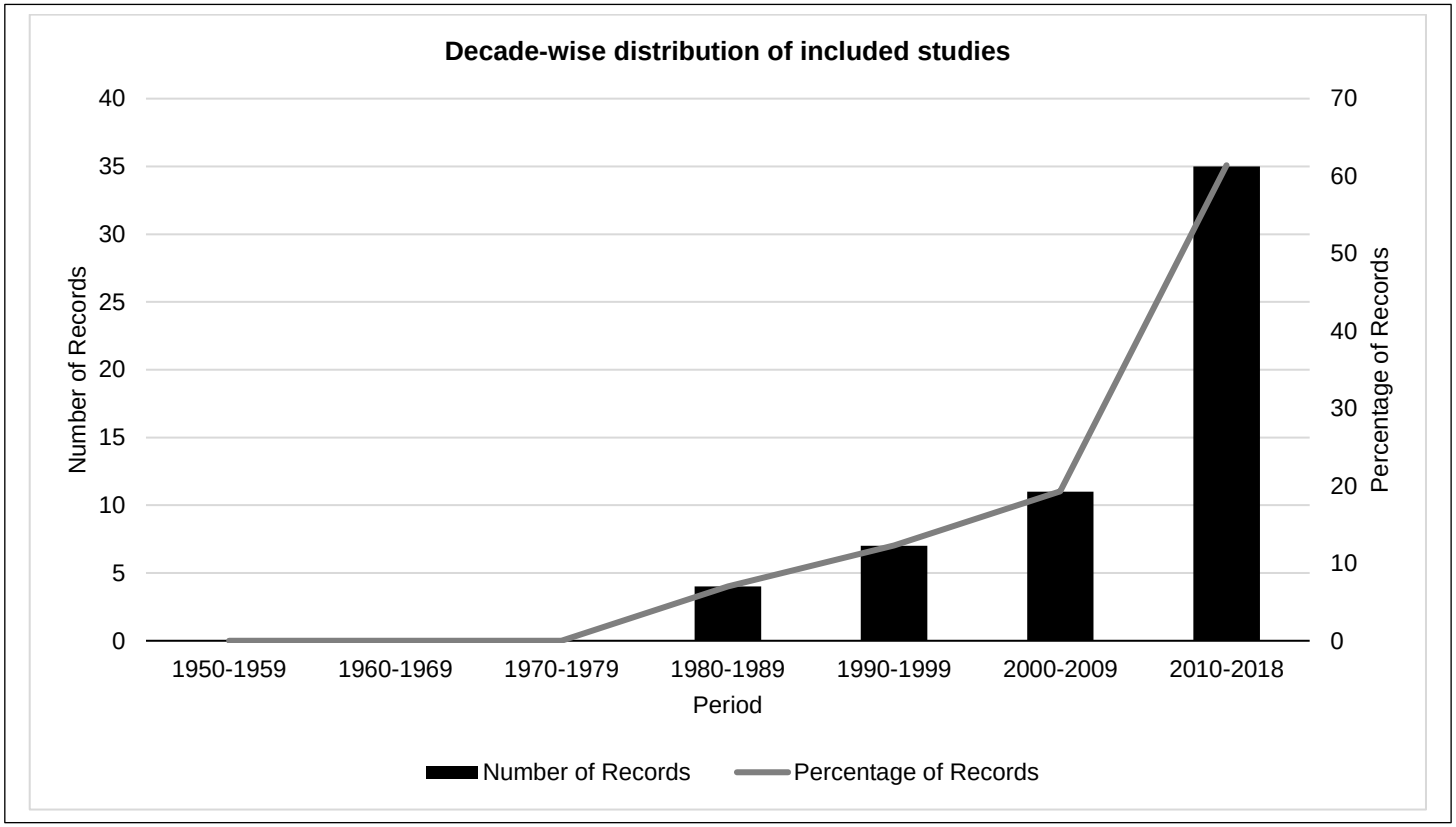


Note: Map source: Sub-regional division of sub-Saharan Africa based on the United Nations Statistics Division's classification (map accessed on January 20, 2019: https://unstats.un.org/unsd/methodology/m49/).

Appendix 2.11. Distribution of studies across countries in sub-Saharan Africa

Country	Included Studies (n = 57)							Total
	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010 – 2018	
	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (7.0%)	7 (12.3%)	11 (19.3%)	35 (61.4%)	57 (100%)
Benin	–	–	–	–	–	–	1 (1.8)	1 (1.8)
Ethiopia	–	–	–	–	1 (1.8)	1 (1.8)	2 (3.5)	4 (7.0)
Ghana	–	–	–	–	1 (1.8)	–	4 (7.0)	5 (8.7)
Malawi	–	–	–	–	–	–	1 (1.8)	1 (1.8)
Nigeria	–	–	–	–	–	2 (3.5)	1 (1.8)	3 (5.2)
Rwanda	–	–	–	–	–	–	1 (1.8)	1 (1.8)
South Africa	–	–	–	4 (7.0)	5 (8.7)	7 (12.2)	19 (33.3)	35 (61.4)
Tanzania	–	–	–	–	–	–	1 (1.8)	1 (1.8)
Uganda	–	–	–	–	–	–	2 (3.5)	2 (3.5)
Zambia	–	–	–	–	–	–	1 (1.8)	1 (1.8)
Cross-national studies (involving Benin, eSwatini, Ghana, Malawi, Mauritania, Namibia, Nigeria, & South Africa)	–	–	–	–	–	1 (1.8)	2 (3.5)	3 (5.2)

Appendix 2.12. Decade-wise distribution of included studies



Appendix 2.13: Methodological Quality Score of Included Studies (using the Mixed Method Appraisal Tool, Hong et al., 2018)

Screening questions (for all study types and designs included in review)	S1.	Are there clear research questions?
	S2.	Do the collected data allow to address the research questions?

Appendix 2.13.1. Quantitative Descriptive Studies (retrospective chart reviews, and cross-sectional survey designs)

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is the sampling strategy relevant to address the quantitative research question?	Is the sample representative of the target population?	Are the measurements appropriate?	Is the risk of nonresponse bias low?	Is the statistical analysis appropriate to answer the research question?		
Retrospective chart review (quantitative descriptive analysis of patient clinical records):								
1	Cummins & Allwood (1984)	Yes	Can't tell	Can't tell	Yes	Yes	* * *	Size of target population not reported. Suicide attempt was established by an unspecified diagnostic case ascertainment at hospital admission.
2	Schlebusch (1985)	Yes	Yes	Can't tell	Yes	Yes	* * * *	Self-destructive behaviour was established by an unspecified diagnostic case ascertainment at hospital admission.
3	Pillay (1987)	Yes	Can't tell	Can't tell	Yes	Yes	* * *	Size of target population not reported. Parasuicide was established by an unspecified diagnostic case ascertainment at hospital admission.
4	Pillay (1988)	Yes	Can't tell	Can't tell	Yes	Yes	* * *	Size of target population not reported. Parasuicide was established by an unspecified diagnostic case ascertainment at hospital admission.
5	Mhlongo & Peltzer (1999)	Yes	Can't tell	Can't tell	Yes	Yes	* * *	Size of target population not reported. Parasuicide was established by an unspecified diagnostic case ascertainment at hospital admission.

Appendix 2.13.1. (continued)

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is the sampling strategy relevant to address the quantitative research question?	Is the sample representative of the target population?	Are the measurements appropriate?	Is the risk of nonresponse bias low?	Is the statistical analysis appropriate to answer the research question?		
Cross-sectional:								
	Structured questionnaire survey given out in community:							
6	Asante & Meyer-Weitz (2017)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population and sample size determination strategy were not reported. Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.
7	Cheng et al. (2014)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population and sample size determination strategy were not reported.
8	Gage (2013)	Can't tell	Yes	Yes	Yes	Yes	* * * *	Sampling strategy not described
9	Kinyanda et al. (2011)	Yes	Yes	Yes	Yes	Yes	* * * * *	
10	Ng et al. (2015)	Yes	Yes	Yes	Yes	Yes	* * * * *	
	Structured questionnaire survey administered at a charity facility:							
11	Swahn et al. (2012).	Yes	Yes	Yes	Yes	Yes	* * * *	Size of the target population and sample size determination strategy were not reported. Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.
	Structured questionnaire survey administered at hospital:							
12	Fine et al. (2012);	Yes	Can't tell	Can't tell	Yes	Yes	* * *	Size of target population and sample size determination strategy were not reported. Suicide attempt was established by an unspecified diagnostic case ascertainment at hospital admission.

Appendix 2.13.1. (continued)

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is the sampling strategy relevant to address the quantitative research question?	Is the sample representative of the target population?	Are the measurements appropriate?	Is the risk of nonresponse bias low?	Is the statistical analysis appropriate to answer the research question?		
13	Pillay & Wassenaar (1991)	Yes	Can't tell	Can't tell	Yes	Yes	* * *	Size of target population and sample size determination strategy were not reported. Suicide attempt was established by an unspecified diagnostic case ascertainment at hospital admission.
	Structured questionnaire survey given out at school:							
14	Amare et al. (2018)	Yes	Yes	Yes	Yes	Yes	* * * * *	Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.
15	Asante et al. (2017)	Yes	Yes	Yes	Yes	Yes	* * * * *	Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.
16	Baiden et al. (2018)	Yes	Yes	Yes	Yes	Yes	* * * * *	
17	Chinawa et al. (2014)	Yes	Can't tell	Yes	Can't tell	Can't tell	* *	Size of the target population was not reported. Response rate was not reported. Specific statistical analysis tools and process were not described.
18	Campbell (2012)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population was not reported. Sampling strategy was not described.
19	Flisher et al. (1993)	Yes	Can't tell	Yes	Can't tell	Can't tell	* *	Size of the target population was not reported. Response rate was not reported. Specific statistical analysis tools and process were not described.
20	Flisher et al. (2006)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population was not reported. Response rate was not reported.

Appendix 2.13.1. (continued)

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is the sampling strategy relevant to address the quantitative research question?	Is the sample representative of the target population?	Are the measurements appropriate?	Is the risk of nonresponse bias low?	Is the statistical analysis appropriate to answer the research question?		
21	James et al. (2017)	Yes	Yes	Yes	Can't tell	Yes	* * * *	Response rate was not reported. Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.
22	Kebede & Ketsela (1993)	Yes	Yes	Yes	Yes	Yes	* * * * *	
23	Khuzwayo et al. (2018)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population was not reported. Response rate was not reported.
24	Liu et al. (2018)	Yes	Yes	Yes	Yes	Yes	* * * * *	
25	Madu & Matla (2003)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population was not reported.
26	Madu & Matla (2004)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population was not reported.
27	Mashego & Madu (2009)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population was not reported.
28	Muula et al. (2013)	Yes	Yes	Yes	Yes	Yes	* * * * *	Authors used an automated variable selection process (backward elimination) to select candidate factors included in the multivariable regression model.
29	Nanewortor (2011)	Yes	Yes	Yes	Can't tell	Yes	* * * *	Response rate was not reported.
30	Nyandindi (2017)	Yes	Yes	Yes	Yes	Yes	* * * * *	
31	Omigbodun et al. (2008)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population and sample size determination strategy were not reported. Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.

Appendix 2.13.1. (continued)

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is the sampling strategy relevant to address the quantitative research question?	Is the sample representative of the target population?	Are the measurements appropriate?	Is the risk of nonresponse bias low?	Is the statistical analysis appropriate to answer the research question?		
32	Peltzer (2008)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population was not reported.
33	Peltzer et al. (2000)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population and sampling procedure were not described. Response rate was not reported.
34	Penning & Collings (2014)	Yes	Yes	Yes	Yes	Yes	* * * * *	
35	Randall et al. (2014)	Yes	Yes	Yes	Yes	Yes	* * * * *	
36	Shaikh et al. (2016)	Yes	Yes	Yes	Yes	Yes	* * * * *	Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.
37	Shilubane et al. (2013)	Yes	Yes	Yes	Yes	Yes	* * * * *	
38	Shilubane et al. (2014)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population and sample size determination strategy were not reported. Authors pre-screened candidate factors using bivariate tests and rejected from the final multivariable logistic regression model factors which showed no statistically significant bivariate relationship with the outcome variable.
39	Sommer (2005)	Can't tell	Can't tell	Yes	Can't tell	Yes	* *	Size of the target population, sample size determination strategy, and sampling process were insufficiently described. Response rate not reported.

Appendix 2.13.1. (continued)

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is the sampling strategy relevant to address the quantitative research question?	Is the sample representative of the target population?	Are the measurements appropriate?	Is the risk of nonresponse bias low?	Is the statistical analysis appropriate to answer the research question?		
40	Stansfeld et al. (2017)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population was not reported.
41	van der Wal & George (2018)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population, sample size determination strategy, and sampling process were insufficiently described. Response rate not reported.
42	Vawda (2012)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population, sample size determination strategy, and sampling process were insufficiently described. Response rate not reported.
43	Wild et al. (2004)	Yes	Can't tell	Yes	Yes	Yes	* * * *	Size of the target population was not reported.
	Structured questionnaire survey given out at university:							
44	Lippi (2014)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population, sample size determination strategy, and sampling process were insufficiently described. Response rate not reported.
45	van der Walt (2016)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population, sample size determination strategy, and sampling process were insufficiently described. Response rate not reported.
46	van Niekerk et al. (2012)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population, sample size determination strategy, and sampling process were insufficiently described. Response rate not reported.
47	van Rooyen (2013)	Yes	Can't tell	Yes	Can't tell	Yes	* * *	Size of the target population, sample size determination strategy, and sampling process were insufficiently described. Response rate not reported.
	Case-control:							
48	Pillay & Wassenaar (1997)	Yes	Yes	Yes	Yes	Yes	* * * * *	
	Cohort design:							
49	Cluver et al. (2015)	Can't tell	Yes	Yes	Yes	Yes	* * * *	Size of target population not reported

Appendix 2.13.2. Qualitative Studies

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is the qualitative approach appropriate to answer the research question?	Are the qualitative data collection methods adequate to address the research question?	Are the findings adequately derived from the data?	Is the interpretation of results sufficiently substantiated by data?	Is there coherence between qualitative data sources, collection, analysis and interpretation?		
	Case study design:							
	Hospital:							
1	Sefa-Dedeh, & Canetto (1992)	Yes	Yes	Yes	Yes	Can't tell	* * * *	Specific method of data analysis is neither reported nor described.
2	Wassenaar et al. (1998)	Yes	Yes	Yes	Yes	Can't tell	* * * *	Specific method of data analysis is neither reported nor described.
3	Beekrum et al. (2011)	Yes	Yes	Yes	Yes	Yes	* * * * *	
	Community:							
4	Shilubane et al. (2012)	Yes	Yes	Yes	Yes	Can't tell	* * * *	Specific method of data analysis is not reported.
	University:							
5	Meissner & Bantjes (2017)	Yes	Yes	Yes	Yes	Yes	* * * * *	
	Case report:							
6	Ogon, & Etuk (2007).	Yes	Yes	No	No	Can't tell	* *	Specific method of data analysis is neither reported nor described.

Appendix 2.13.3 Mixed Methods Studies (sequential designs)

№	Study Reference	Methodological Quality Criteria					Total Score	Comments
		Is there an adequate rationale for using a mixed methods design to address the research question?	Are the different components of the study effectively integrated to answer the research question?	Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?		
	Sequential design:							
1	Shiferaw et al. (2006)	Yes	No	Yes	No	No	* *	No information on the sampling, procedure and the analysis strategy/ process for the qualitative bit. Insufficient information on the population studied.
2	Pretorius (2011)	Yes	Yes	No	No	Yes	* * *	Divergences and inconsistencies between quantitative and qualitative results were not addressed.

Appendix 2.14. Summary of overall quality appraisal

Total score	Overall Quality Score	Quality Rating	Number of Studies (%)
*	20%	Low	0
* *	40%	Average	5 (8.8)
* * *	60%	Above average	19 (33.3)
* * * *	80%	High	17 (29.8)
* * * * *	100%	Very high	16 (28.1)
		Total	57 (100)

Appendix 2.15. Terminologies and case finding strategies of included prevalence studies (by year and country of publication)

Author (year) Country	Terminology		Data Source	Case finding / Assessment
	Term	Definition		
Flisher et al. (1993). South Africa.	Attempted suicide	Self-report: "During the past 12 months did you ever actually try to put an end to your life?"	Cross-sectional survey involving the use of standardised questionnaire given out at schools	Suicidal attempt was assessed by single self-report item: 'Yes' or 'No' response to suicidal attempt item (During the past 12 months did you ever actually try to put an end to your life?).
Kebede, & Ketsela. (1993). Ethiopia.	Attempted suicide	Self-report of deliberate self-harm to terminate one's life, regardless of the medical seriousness of the attempt.	Cross-sectional survey: Structured questionnaire given out at schools.	Attempted suicide was assessed by single self-report item: 'Yes' or 'No' response to suicidal attempt item.
Peltzer et al. (2000). South Africa.	Attempted suicide	Self-report: "Have you actually tried to commit suicide?" Not further defined.	Cross-sectional survey: Structured questionnaire given out at schools.	Single question ('Yes' or 'No' response to attempted suicide item).
Madu & Matla (2003) South Africa.	Attempted suicide	Self-destructive or self-damaging acts – excluding completed suicide.	Cross-sectional survey: Structured questionnaire given out at schools	Single question ('Yes' or 'No' response to attempted suicide item).
Wild et al. (2004). South Africa.	Suicidal attempt	Self-report: "Actually attempted to put an end to your life in the previous 12 months". Not further defined.	Cross-sectional survey: Structured questionnaire given out at schools.	Single question ('Yes' or 'No' response to attempted suicide item).
Sommer (2005). Cross-national (including South Africa).	Suicidal behaviour	An episode of deliberate self-harm or a non-fatal injury (suicide attempt) which may be serious enough to warrant medical attention.	Cross-sectional survey: Structured questionnaire given out at schools.	Suicidal behaviour assessed using the Suicide Probability Scale (Cull & Gill, 1988).
Flisher et al. (2006). South Africa.	Suicidal attempt	Self-report: "Actually trying to kill yourself". Not further define.	Cross-sectional survey: Structured questionnaire given out in school.	Suicidal attempt assessed using the Adolescent Risk Behaviour Questionnaire (Flisher et al., 1993).
Shiferaw et al (2006). Ethiopia.	Suicidal attempt	Self-report: "Have you ever attempted suicide?" Not further defined.	Cross-sectional survey: Structured questionnaire given out in school.	Single question ('Yes' or 'No' response to attempted suicide item).
Omigbodun et al. (2008) Nigeria.	Attempted suicide	Self-report: "Have you tried to kill yourself in the last year?" Not further defined.	Cross-sectional survey: Structured questionnaire given out in school.	Single question ('Yes' or 'No' response to attempted suicide item).
Peltzer (2008). South Africa	Suicide attempt	Self-report: "Have you made one or more prior suicide attempts in the past year".	Cross-sectional survey: Structured questionnaire given out in school.	Single question (Yes' or 'No' response to attempted suicide item).

Appendix 2.15 (continued)

Author(s) (year) Country	Terminology		Data Source	Case finding / Assessment
	Term	Definition		
Mashego & Madu (2009). South Africa.	Suicidal behaviour	Self-destructive or self-damaging acts – excluding completed suicide.	Cross-sectional survey: Structured questionnaire given out at schools.	Suicidal attempt assessed using the Suicidal Behaviour Questionnaire (Roberts, Chen & Roberts, 1997).
Kinyanda et al. (2011). Uganda.	Self-injury Suicidal attempt	Self-report of having done any of the following: Self-injury - "ever tried to hurt yourself". Suicide attempt - "ever tried to kill yourself". Not further defined.	Cross-sectional survey: Researcher-administered structured questionnaire given out in war-affected and non-war-affected communities.	Single question ('Yes' or 'No' response to lifetime suicidality items): Death wish: "ever wished you were dead" Self-injury: "ever tried to hurt yourself" Suicide attempt: "ever tried to kill yourself"
Nanewortor (2011). Ghana	Attempted suicide	Self-report: "Have you ever attempted suicide?"	Cross-sectional survey: Structured questionnaire given out at schools.	Single question ('Yes' or 'No' response to lifetime attempted suicide item): "Have you ever attempted suicide?"
Campbell (2012) South Africa	Attempted suicide	Self-report: "non-fatal self-inflicted destructive act with explicit or inferred intent to die".	Cross-sectional survey of students using structured questionnaire.	Single question ('Yes' or 'No' response to lifetime suicide attempt item): "Have you previously attempted suicide?"
Swahn et al. (2012). Uganda.	Suicidal attempt	Self-report: Tried to kill yourself in the past year.	Cross-sectional survey: Interviewer-administered structured questionnaire given out in eight drop-in centres.	Suicidal attempt assessed by a self-report questionnaire constructed ad hoc by the authors.
van Niekerk et al. (2012). South Africa.	Suicidal attempt	Self-report: "Have you ever made an attempt on your own life?"	Cross-sectional survey: Structured questionnaire given out at schools.	Single question ('Yes' or 'No' response to lifetime suicide attempt item): "Have you ever made an attempt on your own life?"
Vawda (2012). South Africa	Suicide attempt	Self-report: Have you ever attempted to commit suicide?	Cross-sectional survey: Structured questionnaire given out at schools.	Single question ('Yes' or 'No' response to lifetime suicide attempt item): "Have you ever attempted to commit suicide?"
Gage (2013). Ethiopia	Suicide attempt	Self-report: "Have you tried to commit suicide or tried to do something that would cause you to die?"	Cross-sectional survey: Structured questionnaire given out in a community.	Single question ('Yes' or 'No' response to suicide attempt item): "During the past 3 months, have you tried to commit suicide or tried to do something that would cause you to die?"
Muula et al. (2013). Zambia.	Self-inflicted serious injury	Self-report: "Seriously injured yourself on purpose during the past 12 months?"	Secondary analysis of the 2004 Zambia Global School-based Student Health Survey: Structured questionnaire given out in school.	Single question ('Yes' or 'No' response to self-inflicted serious injury item).

Appendix 2.15 (continued)

Author(s) (year) Country	Terminology		Data Source	Case finding / Assessment
	Term	Definition		
Shilubane et al. (2013). South Africa.	Suicidal attempt	Self-report: "During the past 6 months, how many times did you actually attempt suicide (that is, take some action to end your life)?"	Secondary analysis of the 2002 and 2008 South African Youth Risk Behaviour Surveys (SAYRBS)	Suicidal attempt was measured a single item asking participants, "During the past 6 months, how many times did you actually attempt suicide (that is take some action to end your life)?"
van Rooyen (2013). South Africa	Deliberate self-harm	Self-report: "Deliberate, direct destruction or alteration of body tissue without conscious suicidal intent but resulting in injury severe enough for tissue damage to occur".	Secondary analysis of 2009 University of Pretoria student Survey: Structured questionnaire given out to university students.	Deliberate self-harm inventory (Gratz, 2001)
Cheng et al., (2014) Cross-national (including Nigeria, & South Africa).	Suicidal attempt	Self-report: "During the past 12 months, did you ever attempt suicide?"	Cross-sectional survey. Structured questionnaire given out in poor urban neighbourhoods.	Suicidal attempt was assessed by a self-report ('Yes' or 'No' response) item constructed ad hoc by the authors for the study.
Chinawa et al. (2014) Nigeria.	Attempted suicide	Self-report: "Ever attempted suicide at least once in the past 12 months?"	Cross-sectional survey in secondary schools.	Attempted suicide was assessed by a single self-report item on the Health Kids Colorado Questionnaire adapted by the authors for the study.
Lippi (2014) South Africa.	Deliberate self-harm	Intentional behaviours aimed at inflicting damage to body tissue, as well as the intentional breaking of one's own bones.	Secondary analysis of 2009 University of Pretoria student Survey: Structured questionnaire given out to university students.	Self-harm was assessed with the Deliberate Self-harm Inventory (Gratz, 2001)
Penning, & Collings, (2014). South Africa.	Self-injury	Self-report: "Have you engaged in self-injurious behaviour over the past 12 months?"	Cross-sectional survey. Standardised self-report questionnaires given out to secondary school students.	Single question ('Yes' or 'No' response to self-injury item): "Have you engaged in self-injurious behaviour over the past 12 months?"
Randall et al. (2014) Benin.	Attempted suicide	Self-report: ''During the past 12 months, how many times did you actually attempt suicide?''.	Secondary analysis of the 2009 Benin Global School-based Student Health Survey: Structured questionnaire given out in schools.	Suicidal attempt was measured a single item asking participants, ''During the past 12 months, how many times did you actually attempt suicide?''
Shilubane et al. (2014). South Africa.	Suicide attempt	Self-report: "In the past six months did you make one or more suicide attempts?"	Cross-sectional survey. Standardised self-report questionnaires given out to secondary school students.	Single question ('Yes' or 'No' response to suicide attempt item): "In the past six months did you make one or more suicide attempts?"
Cluver et al. (2015). South Africa	Suicide attempt	Self-report: "in the past month did you make a suicide attempt?"	Prospective study, using longitudinal repeated structured interviews involving adolescent in Mpumalanga and the Western Cape, South Africa.	Suicidal attempt was measured using the MINI International Psychiatric Interview for children and adolescents' suicidality Scale.

Appendix 2.15 (continued)

Author(s) (year) Country	Terminology		Data Source	Case finding / Assessment
	Term	Definition		
Ng et al. (2015). Rwanda	Suicidal behaviour	Self or caregiver-report: "you deliberately tried to hurt or kill yourself".	Structured interviews carried out in participants' homes, with child and caregiver interviews conducted separately.	Suicidal behaviour assessed by single self-report item – "Yes" or "No" response to suicidal behaviour item adopted from the Youth Self-Report (YSR) Internalizing Subscale (Achenbach, 1991).
Shaikh et al. (2016). Malawi.	Suicide attempt	Self-report: ''During the past 12 months, how many times did you actually attempt suicide?''	Secondary analysis of the 2009 Malawi Global School-based Student Health Survey: Structured questionnaire given out in schools.	Suicidal attempt was measured with a single item asking participants, ''During the past 12 months, how many times did you actually attempt suicide?''
van der Walt (2016). South Africa	Self-harm	Self-report: "self-destructive behaviours that are undertaken to damage or harm oneself, but not to intentionally end life".	Cross-sectional survey. Standardised self-report questionnaires given out university students.	Self-harm was assessed with the Self-Harm Inventory (Sansone, Wiederman & Sansone, 1998).
Asante et al. (2017). Ghana	Suicide attempt	Self-report: ''During the past 12 months, how many times did you actually attempt suicide?''	Secondary analysis of the 2012 Ghana Global School-based Student Health Survey: Structured questionnaire given out in schools.	Suicide attempt was measured with a single item asking participants, ''During the past 12 months, how many times did you actually attempt suicide?''
Asante, & Meyer-Weitz, (2017). Ghana.	Suicidal attempt	Self-report: "In the past month did you make one or more suicide attempts?"	Cross-sectional survey: Interviewer-administered structured questionnaire.	Single question ('Yes' or 'No' response to suicidal attempt item): "in the past month did you make one or more suicide attempts?"
James et al. (2017). South Africa.	Suicidal attempt	Self-report: "In the past six months did you make one or more suicide attempts?"	Secondary analysis of the 2011 South African Youth Risk Behaviour Survey (SAYRBS)	Suicidal attempt was measured a single item asking participants, "During the past 6 months, how many times did you actually attempt suicide (that is take some action to end your life)?"
Nyandindi (2017). Tanzania	Suicide attempt	Self-report: ''During the past 12 months, how many times did you actually attempt suicide?"	Secondary analysis of the 2015 Tanzania Mainland Global School-based Student Health Survey: Structured questionnaire given out in schools.	Suicide attempt was measured with a single item asking participants, ''During the past 12 months, how many times did you actually attempt suicide?''
Stansfeld et al. (2017). South Africa	Suicide attempt	Self-report: ''Have you attempted suicide during the past 12 months?"	Cross-sectional survey. Standardised self-report questionnaires given out to high school students.	Attempt suicide was measured with a single item asking participants, ''Have you attempted suicide during the past 12 months?''
Amare et al. (2018). Ethiopia	Suicide attempt	Self-report: "Have you tried to kill yourself?"	Cross-sectional survey. Standardised self-report questionnaires given out to high school students.	Single question ('Yes' or 'No' response suicide attempt item): "Have you ever tried to kill yourself: a) in your lifetime, b) in the last one month?"

Appendix 2.15 (continued)

Author(s) (year) Country	Terminology		Data Source	Case finding / Assessment
	Term	Definition		
Baiden et al. (2018). Ghana	Suicide attempt	Self-report: ‘‘During the past 12 months, how many times did you actually attempt suicide?’’	Secondary analysis of the 2012 Ghana Global School-based Student Health Survey: Structured questionnaire given out in schools.	Suicide attempt was measured with a single item asking participants, ‘‘During the past 12 months, how many times did you actually attempt suicide?’’
Khuzwayo et al. (2018). South Africa	Suicide attempt	Self-report: ‘‘Actually attempted suicide past 12 months”	Cross-sectional survey. Standardised self-report questionnaires given out to high school students.	Centers for Disease Control and Prevention (CDC) Youth Risk Behavior Surveillance System. Single question (‘Yes’ or ‘No’ response attempted suicide item): “Have you actually attempted suicide during the past 12 months?”
Liu et al. (2018). Cross-national (including Benin, Ghana, Malawi, Mauritania, Namibia, & eSwatini).	Suicide attempt	Self-report: ‘‘During the past 12 months, how many times did you actually attempt suicide?’’	Secondary analysis of the WHO Global School-based Student Health Survey data of the selected countries: Structured questionnaire given out in schools.	Suicide attempt was measured with a single item asking participants, ‘‘During the past 12 months, how many times did you actually attempt suicide?’’
van der Wal, & George (2018). South Africa.	Self-harm	Self-report: “The deliberate, direct alteration or destruction of healthy body tissue without an intent to die”.	Cross-sectional survey. Standardised self-report questionnaires given out to secondary school students.	Single question (‘Yes’ or ‘No’ response self-harm item): “Have you ever self-harmed?”

Appendix 3

Appendix 3.1: Survey Questionnaire

Questionnaire Code: _____

[Version IV: 28-Feb-2017]

UNIVERSITY OF LEEDS

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK.
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

Overview

This survey is about your health and the things you do that may affect your health. Other young people like you in Ghana are doing this survey. At the end, the information you give will be used to develop better health programmes for young people like yourself.

DO NOT write your name anywhere on this survey. Read every question. The answers you give will be kept private. No one will know how you answer. Honestly answer the questions based on what you really know or do. There are no right or wrong answers.

Completing this survey is voluntary. If you do not want to answer a question, just leave it blank. Thank you very much for your help.

Section A

The questions in this section ask about you and some things you do every day.

1) What is your gender?

Male	Female
1	2

2) What is your age? (*please state*):_____

3) What is your educational level?

No formal education	Primary school	JHS	SHS/Technical/Vocational school	Other
1	2	3	4	5

4) If you are still in school, are you a boarding or day student?

I am a boarding student	I am a day student
1	2

5) During the past 12 months, on how many days were you absent from school without permission?

0 day	1 – 5 days	5 – 20 days	Other
1	2	3	4

6) What is your religious group?

Christian	Muslim	African Traditional Religion	Other
1	2	3	4

7) What is your employment status?

Unemployed	Self-employed	I work for someone	Other
1	5	3	4

8) How will you describe your family structure?

My father has one wife	My father has more than one wife
1	2

9) How many siblings do you have? (Siblings are your brothers and sisters)

I am an only child	1 sibling	2 siblings	3 siblings	4 siblings	5 siblings	6 siblings	More than 6 siblings
1	2	3	4	5	6	7	8

10) What is your living arrangement? I live

alone	with my father and mother	with my father only	with my mother only	with my sister/brother	with an extended relative	with my partner	Other
1	2	3	4	5	6	7	8

11) Do you currently live in a public area (e.g., lorry station, market place, train station etc.)?

No	Yes
0	1

(If '**Yes**', please answer 13a & 13b. If '**No**', please continue at 14).

11a). How long have you been living in this area?

6 months – 1 year	2 – 5 years	More than 5 years
1	2	3

11b). Do you still have contact with your family?

No	Yes
0	1

12) Who is **most** responsible for taking care of your needs? (*Select only one answer*).

Myself	Both my father and mother	Only my father	Only my mother	My sister or brother	Extended relation	Other
1	2	3	4	5	6	7

13) Employment status of parent(s) or guardian:

Self-employed	Employed	Unemployed	Retired	Other
1	2	3	4	5

14) How many cigarettes do you smoke in a typical week?

I never smoke	I used to smoke, but I have stopped	Up to five cigarettes a week	6–20 cigarettes a week	21–50 cigarettes a week	More than 50 cigarettes a week
1	2	3	4	5	6

15) How many alcoholic drinks do you have in a typical week? (This includes drinking beer, akpeteshie, palm wine, pito, brukutu, gin, brandy, bonsamnsuo, yebudidi, schnapps, vodka, black label, bailey, alomo, club, ogidigidi, Guiness, Smirnoff, Hennessy, or Star. Drinking alcohol does not include drinking a few sips of wine for religious purposes. One "drink" is a glass of wine, a bottle of beer, a small glass of liquor, or a mixed drink).

I never drink alcohol	One drink	2–5 drinks	6–10 drinks	11–20 drinks	More than 20 drinks
1	2	3	4	5	6

16) Please tick any of the following types of drug you have taken during the past 12 months or 1 year.

I never take drugs	Marijuana/cannabis / 'wee' / 'abonsam tawa'/'Jah'/'Indian hemp'/'ganja'/'ahabammono'	Heroin / opium / morphine	Speed/LSD/ amphetamines/methamphetamines/' yellow'/'ice'	Cocaine / 'white powder'/ 'coke'	Other drugs and substances (not including medication).
1	2	3	4	5	6

Section B

The questions in this section ask generally about interpersonal and negative life events and problems you have experienced **during the past 12 months or 1 year.**

17) Have you had difficulty in making friends or keeping friends?

No	Yes
0	1

18) Have you had any serious arguments or fights with friends?

No	Yes
0	1

19) Do you have a boyfriend or girlfriend?

No	Yes
0	1

20) How would you describe your sexual orientation?

Heterosexual	Lesbian	Gay	Bisexual	Transgender
1	2	3	4	5

21) Have you had any serious problems with your boyfriend or girlfriend?

No	Yes
0	1

22) Have you had a break-up with a boyfriend or girlfriend?

No	Yes
0	1

23) Have you had problems keeping up with school work?

No	Yes
0	1

24) Have you been sacked from school because you owed fees?

No	Yes
0	1

25) Have you been bullied at school or in your area? (Bullying occurs when a young person or group of young persons tease, threaten, spread rumours about, hit, shove, or hurt another young person over and over again. It is not bullying when two young persons of about the same strength or power argue or fight or tease each other in a friendly and fun way)?

No	Yes
0	1

26) Have your parents separated or divorced?

No	Yes
0	1

27) Have you had any serious arguments or fights with one or both of your parents?

No	Yes
0	1

28) Have your parents had any serious arguments or fights?

No	Yes
0	1

29) Have you or any member of your family had a serious illness or accident?

No	Yes
0	1

30) Has any close friend had a serious illness or accident?

No	Yes
0	1

31) Have you been seriously physically beaten?

No	Yes
0	1

32) Have you been in trouble with the police?

No	Yes
0	1

33) Has anyone among your immediate family (mother, father, brother, or sister) died?

No	Yes
0	1

34) Has any close friend to you died?

No	Yes
0	1

35) Has anyone among your family killed himself / herself?

No	Yes
0	1

36) Has anyone among your friends killed himself / herself?

No	Yes
0	1

37) Has anyone among your family tried killing himself/herself or intentionally harmed himself/herself?

No	Yes
0	1

38) Has anyone among your close friends tried killing himself/herself or intentionally harmed himself/herself?

No	Yes
0	1

39) Have you had worries about your sexual orientation (i.e. that you may be gay or bisexual)?

No	Yes
0	1

40) Has anyone forced you (i.e. physically or verbally) to engage in sexual activities against your will?

No	Yes
0	1

41) Has any other negative or unpleasant event occurred involving you, your family or close friends?

No	Yes
0	1

Section C

The questions in this section ask about times in your life when you have thought of harming yourself and the things you may have actually done to harm yourself.

42). Have you **actually ever** intentionally harmed yourself? (e.g., cutting, burning, or poisoning yourself, or tried to harm yourself in some other way, for example, hanging, jumping from height etc.).

No	Yes
0	1

If '**Yes**', please answer 42a, 42b & 42c. If '**No**', please continue at 45.

45a). How old were you the **first time** you intentionally harmed yourself? _____

45b). How old were you the **last time** you intentionally harmed yourself? _____

45c). How many times did you harm yourself in the past 12 months or 1 year? ____

43) How many times in your life have you intentionally harmed yourself? (*Please give your best estimate*): _____

43a). How many times in the past month? (*Please give your best estimate*) _____

44) Did you ever in your life actually intentionally harm yourself before the past 12 months

No	Yes
0	1

Now, below is a list of things that people sometimes intentionally do or use to harm themselves. Please select which of these you have EVER done or used:

45) **Alcohol** (*used with direct intention to harm yourself*)

Did not use	used
0	1

If '**Used**', please answer 45a & 45b. If '**Did not use**', please continue at 46.

45a). What were you drinking?

Beer only	Wine only	Spirit only	Alcoholic drink mixed with marijuana	Other
1	2	3	4	5

45b). How much did you drink? _____

46) **Medications** (*used with direct intention to harm yourself*) [e.g., paracetamol, codeine etc.]

Did not use	used
0	1

If '**Used**', please answer 46a, 46b, 46c & 46d. If '**Did not use**', please continue at 47

46a). What medication did you take? _____

46b). How much did you take? _____

46c). What other medication did you take? _____

47) **Drugs** (*used with direct intention to harm yourself*) [e.g., marijuana, hashish, cocaine etc.]

Did not use	used
0	1

If '**Used**', please answer 47a, 47b, & 47c. If '**Did not use**', please continue at 48.

47a). What drug did you take? _____

47b). How much did you take? _____

47c). What other drug did you take? _____

48) **Poison / Caustic Substance**

Did not use	used
0	1

If '**Used**', please answer 48a & 48b. If '**Did not use**', please continue at 49.

48a). What substance did you take?

Toilet duck/toilet cleaner/ 'parazone'	Rat poison	Acid	Polish remover	Bleach/washing powder	Weedicide/Weed killer	Insecticide
1	2	3	4	5	6	7

48b). How much did you take? _____

49) **Burning**

Did not use	used
0	1

If '**Used**', please answer 49a, 49b, & 49c. If '**Did not use**', please continue at 50.

49a). What did you use?

Cigarette	Match/Lighter	Oven/stove	light bulb	Curling iron/ hair straighteners	Clothes iron	Hot metal	Heated knife	Candle
1	2	3	4	5	6	7	8	9
Charcoal	mosquito coil	boiling water	Incense stick	Grease	firewood	Water heater	Other	
10	11	12	13	14	15	16	17	

49b). Where did you burn yourself?

Wrist/arms	Torso	Legs	Rectum	Vagina	Penis	Other/Mixed
1	2	3	4	5	6	7

49c). Do you have scars or marks on your body because of this?

No	Yes
0	1

50) **Cutting / Scratching**

Did not use	used
0	1

If '**Used**', please answer 50a, 50b, 50c & 50d. If '**Did not use**', please continue at 51

50a). What did you use?

Blade/Razor	Kitchen knife	Pocket knife/Swiss Army knife	Tweezers	Nail	Scissors/wire cutter	Fingernails
1	2	3	4	5	6	7
Glass/Light bulb/Pottery	Eating utensils	Can lid / Soft drink can	Craft knife/Stanley knife/Box cutter/Carpet knife/ Utility knife		Safety pin/push pin/tack	Other
8	9	10	11		12	13

50b). Where did you cut/scratch yourself?

Wrist/arms	Throat	Torso	Legs	Other / mixed
1	2	3	4	5

50c). How severe or deep was the cut?

Scratch	Cuts, no tendon, artery or nerve damage	Tendon, artery, nerve damage
1	2	3

50d) Do you have scars or marks on your body because of this?

No	Yes
0	1

51) **Stabbing / Puncture**

Did not use	used
0	1

If '**Used**', please answer 51a, 51b, & 51c. If '**Did not use**', please continue at 52.

51a). What did you use?

Needle	Kitchen knife	Nail	Pins	Pocket knife	Scissors	keys	Utility knife	Glass	Pencil/ pen	Other
1	2	3	4	5	6	7	8	9	10	11

51b). Where did you stab/puncture yourself?

Wrist/arms	Throat	Torso	Legs	Other/Mixed
1	2	3	4	5

51c). Do you have scars or marks on your body because of this?

No	Yes
0	1

52) **Gun / Firearm**

Did not use	used
0	1

If '**Used**', please answer 52a, 52b, & 52c. If '**Did not use**', please continue at 53.

52a). What kind of gun did you use?

BB gun	Hand gun	Riffle	Automatic gun	Dart gun	Don't know
1	2	3	4	5	6

52b). Where did you shoot?

Head	Chest	Lower torso	Limbs	Other/mixed
1	2	3	4	5

52c). Do you have scars or marks on your body because of this?

No	Yes
0	1

53) **Hanging**

Did not use	used
0	1

If '**Used**', please answer 53a. If '**Did not use**', please continue at 54.

53a). What did you use?

String	Rope	Bed sheet/cloth	Belt / Strap	Towel	skipping rope	Dog lead	Sponge	Other
1	2	3	4	5	6	7	8	9

54) **Strangling**

Did not use	used
0	1

If '**Used**', please answer 54a. If '**Did not use**', please continue at 55.

54a). What did you use?

String	Rope	Bed sheet/cloth	Belt / Strap	Towel	skipping rope	Dog lead	Sponge	Hand	Other
1	2	3	4	5	6	7	8	9	10

55) **Suffocating**

Did not use	used
0	1

If '**Used**', please answer 55a. If '**Did not use**', please continue at 56.

55a). What did you use?

Carbon monoxide (car fumes)	Plastic bag	Pillow	Other
1	2	3	4

56) **Jumping from height**

Did not use	used
0	1

If '**Used**', please answer 56a, 56b, & 56c. If '**Did not use**', please continue at 57.

56a). From where/what did you jump? _____

56b). On what did you land? _____

56c). From how high did you jump (*in feet*)? _____

57) **Drowning**

Did not use	used
0	1

If '**Used**', please answer 57a, 57b, 57c, & 57d. If '**Did not use**', please continue at 58

57a). Where did you do this?

Swimming pool	Sea	River	Other
1	2	3	4

57b). Was the water warm or cold?

Warm	Cold
1	2

57c). How far or deep from shore or safety did you swim (*in feet*)? _____

57d). Can you swim?

No	Yes
0	1

58) **Hitting Body**

Did not use	used
0	1

If '**Used**', please answer 58a, 58b, 58c & 58d. If '**Did not use**', please continue at 59.

58a). What object did you hit?

Wall	Floor	Wall & floor	Fists	Sink	Appliances	Hammer	Furniture	Whip	Other
1	2	3	4	5	6	7	8	9	10

58b). How many times did you hit yourself? _____

58c). What part of your body was hit?

Head against object	Fists against object	Fists against head	Other
1	2	3	4

58d). Did you have bruise/swelling as a result of this?

No	Yes
0	1

59) **Stopped Required Medical Treatments or Medications** (*with direct intention to harm yourself*)

Did not use	used
0	1

If '**Used**', please answer 59a, 59b, 59c, & 59d. If '**Did not use**', please continue at 60.

59a). What did you stop doing?

Stopped medications	Stopped needed medical treatments	Other
1	2	3

59b). For how long did you stop the treatment/medication (*hours*)? _____

59c). What was the treatment/medication for? _____

59d). What did you expect as consequence for stopping the treatment/medication? _____

60) **Stepped into Traffic (**e.g., street/road or railway**)**

Did not use	used
0	1

60a). If '**used**', please describe _____ _____

61) **What other method have you ever used to harm yourself?** Please describe any other methods you ever used but have not been identified above. _____ _____

62) What was your motive or reason for intentionally harming yourself the last time you intentionally harmed yourself? (*Please select as many as apply*):

A) My thoughts were so unbearable, I could not endure them any longer. **[ ]**
B) I wanted to show someone how much I loved him/her. **[ ]**
C) It seemed that I lost control of myself, and I do not know why I did it. **[ ]**
D) The situation was so unbearable that I could not think of any other alternative **[]**
E) I wanted to get away for a while from an unacceptable situation. **[ ]**
F) I wanted others to know how desperate I felt. **[ ]**
G) I wanted to die. **[ ]**
H) I wanted to get help from someone. **[ ]**
I) I wanted to know if someone really cared about me. **[ ]**
J) I wanted others to pay for the way they treated me. **[ ]**
K) I wanted to make someone feel guilty. **[ ]**
L) I wanted to persuade someone to change his/her mind. **[ ]**
M) I wanted to make things easier for others. **[ ]**
N) I wanted to sleep for a while. **[ ]**
O) Other motives or reasons (*please state*): _____ _____

63) Have you ever told anyone that you had done these things?

No	Yes
0	1

63a). If '**Yes**', whom did you tell? **(***Please do not give specific names. We only want to know if it was someone like a* ***parent***, ***teacher***, ***doctor***, ***friend***, ***neighbour***, ***pastor***, ***Imam***, ***social worker, sibling*** *etc.***)** _____

64) Have you ever been to the hospital/clinic to see a nurse or a doctor for medical treatment for harm caused by intentionally harming yourself?

No	Yes
0	1

65) On a scale of 0 to 4, what do you think the likelihood is that you will intentionally harm yourself again in the future?

Not at all	*A little bit*	*Somewhat*	*Very Much*	*Extremely*
0	1	2	3	4

Section D

Please write your answers in response to the question below in the spaces provided.

66) In your view, what can the following people, groups and institutions do to **prevent** young people like you from intentionally harming themselves?

a. **Young people themselves**: _____
_____

b. **Families** (e.g., parents, brothers and sisters, other relatives): _____
_____

c. **Friends** or **Peers:** _____
_____

d. **Schools** (e.g., teachers, head teachers, school counsellors): _____
_____

e. **Charity facilities** (e.g., CAS, Street Academy, Chance for Children)**:** _____
_____

f. **Churches** & **Mosques** (e.g., pastors, Imams, Sunday school teachers): _____
_____

g. **Government** (e.g., Ghana Education Service, the Department of Social welfare, the Ministry of Gender, Children and Social Protection, Metropolitan-Municipal-and-District-Assemblies etc.): _____
_____

Thank You

Appendix 3.2: Survey key item sources

Survey Item	Source
Section A	
Do you currently live in a public area (e.g., lorry station, market area, train station etc.)? How long have you been living in this area? Do you still have contact with your family?	Researcher-created item
How many cigarettes do you smoke in a typical week?	CASE
How many alcoholic drinks do you have in a typical week?	CASE
Please tick any of the following types of drugs you have taken during the past 12 months: I never take drugs Marijuana/cannabis / 'wee' / 'abonsam tawa'/'Jah'/'Indian hemp'/'ganja'/'ahabammono' Heroin / opium / morphine Speed/LSD/ amphetamines/methamphetamines/' yellow'/'ice' Cocaine / 'white powder'/ 'coke' Other drugs and substances (not including medication).	Adopted from GSHS-Ghana
Section B	
Have you had difficulty in making friends or keeping friends?	CASE
Have you had any serious arguments or fights with friends?	CASE
Do you have a boyfriend or girlfriend?	Researcher-created item
How would you describe your sexual orientation?	Researcher-created item
Have you had any serious problems with your boyfriend or girlfriend?	CASE
Have you had a break-up with a boyfriend or girlfriend?	Researcher-created item
Have you had problems keeping up with school work?	CASE
Have you been sacked from school because you owed fees?	GSHS-Ghana
Have you been bullied at school or in your area?	GSHS-Ghana
Have your parents separated or divorced?	CASE
Have you had any serious arguments or fights with either or both of your parents?	CASE
Have your parents had any serious arguments or fights?	CASE
Have you or any member of your family had a serious illness or accident?	CASE
Has any close friend had a serious illness or accident?	CASE
Have you been seriously physically beaten?	CASE

Appendix 3.2 (continued)

Survey Item	**Source**
Section B (*continued*)	
Have you been in trouble with the police?	CASE
Has anyone among your immediate family (mother, father, brother, or sister) died?	CASE
Has any close friend to you died?	CASE
Has anyone among your family killed himself / herself?	CASE
Has anyone among your friends killed himself / herself?	CASE
Has anyone among your family tried killing himself/herself or intentionally harmed himself/herself?	Researcher-created item
Has anyone among your close friends tried killing himself/herself or intentionally harmed himself/herself?	Researcher-created item
Have you had worries about your sexual orientation (i.e. that you may be gay or bisexual)?	CASE
Has anyone forced you (i.e. physically or verbally) to engage in sexual activities against your will?	CASE
Has any other negative or unpleasant event occurred involving you, your family or close friends?	CASE
Section C	
Have you actually ever intentionally harmed yourself? (e.g., cutting, burning, or poisoning yourself, or tried to harm yourself in some other way, for example, hanging, jumping from height etc.).	Adapted from CASE
How old were you the first time you actually harmed yourself?	SITBI
How many times did you actually harm yourself in the past 12 months?	SITBI
How many times did you actually harm yourself in the past month?	SITBI
How many times did you actually harm yourself in the past week?	SITBI
How old were you the last time you actually harmed yourself?	SITBI
Did you ever in your life actually intentionally harm yourself before the past 12 months	Researcher-created item

Appendix 3.2 (continued)

Survey Item	**Source**
Section C (*continued*)	
Below is a list of things that people sometimes intentionally do or use to harm themselves. Please select which of these you have ever done or used: – Alcohol – Medications – Drugs – Poison/caustic substance – Burning – Cut/scratch – Stabbing/puncture – Gun/firearm – Hanging – Strangling – Suffocating – Jumping – Drowning – Hitting body – Stopped required medical treatment or medications – Stepped into traffic	SASII
Have you ever told anyone that you had done these things?	SASII
What was your motive or reason for intentionally harming yourself the last time? (*Please select as many as apply*): – My thoughts were so unbearable, I could not endure them any longer. – I wanted to show someone how much I loved him/her. – It seemed that I lost control of myself, and I do not know why I did it. – The situation was so unbearable that I could not think of any other alternative. – I wanted to get away for a while from an unacceptable situation. – I wanted others to know how desperate I felt. – I wanted to die. – I wanted to get help from someone. – I wanted to know if someone really cared about me. – I wanted others to pay for the way they treated me. – I wanted to make someone feel guilty. – I wanted to persuade someone to change his/her mind. – I wanted to make things easier for others. – I wanted to sleep for a while.	CASE, WHO/EURO-MSSB.

Appendix 3.2 (continued)

Survey Item	**Source**
Section C (*continued*)	
Have you ever been to the hospital/clinic to see a nurse or a doctor for medical treatment for harm caused by intentionally harming yourself?	SITBI
On a scale of 0 to 4, what do you think the likelihood is that you will intentionally harm yourself again in the future?	SITBI
Section D	
In your view, what can the following people, groups and institutions do to prevent young people like you from intentionally harming themselves? – Young people themselves – Families (e.g., parents, brothers and sisters, other relatives) – Friends or peers – Schools (e.g., teachers, head teachers, school counsellors) – Churches & Mosques (e.g., pastors, Imams, Sunday school teachers) – Government ((e.g., Ghana Education Service, the Department of Social welfare, the Ministry of Gender, Children and Social Protection, Metropolitan-Municipal-and-District-Assemblies etc.)	Researcher-created item

Note:
GSHS-Ghana = 2012 WHO–Global School-based Student Health Survey in Ghana (Owusu, 2012).
CASE = Child and Adolescent Self-harm in Europe studies (e.g., Hawton et al., 2002, 2006; Madge et al., 2008, 2011)
SASII = Suicide Attempt Self-Injury Interview (Linehan et al., 2006);
SITBI = Self-Injurious Thoughts and Behaviors Interview (Nock, Holmberg, Photos & Michel, 2007)
WHO/EURO-MSSB = WHO/EURO Multicentre Study on Suicidal Behaviour (Hjelmeland et al., 2002).

Appendix 3.3: Expert Review of Draft Survey Questionnaire

Original Survey Item	Source	Recommended Modification/Revision	Comments
Have you been bullied at school?	CASE	Have you been bullied at school or in your area?	Not all street-connected adolescents attend school, and bullying can also occur among young people within neighbourhoods, community etc.
Have you been seriously physically abused?	CASE	Have you been seriously physically beaten?	Among young people in Ghana, physically "beaten" denotes physical abused.
Has anyone among your family or friends committed suicide?	CASE	Split item into: 1). Has anyone among your family killed himself/herself? 2). Has anyone among your friends killed himself or herself?	The words "committed" and "suicide" are technical and the average teenager in Ghana may not be familiar with them. Family member suicide and friend suicide may each have different degrees of impact on the behavioural outcomes among adolescents.
Has anyone among your family attempted suicide or deliberately harmed themselves?	CASE	Has anyone among your family tried to kill himself/herself or intentionally harmed himself/herself?	The words "attempted", "suicide", and "deliberately" may not be familiar to the average teenager in Ghana.
Has anyone among your close friends attempted suicide or deliberately harmed themselves?	CASE	Has anyone among your close friends tried to kill himself/herself or intentionally harmed himself/herself?	The words "attempted", "suicide", and "deliberately" may not be familiar to the average teenager in Ghana.
Has any other distressing event occurred involving you, your family or close friends?	CASE	Has any other negative or unpleasant event occurred involving you, your family or close friends?	The word "distressing" may not be easily understood by the average Ghanaian teenager.

Note:
CASE = Child and Adolescent Self-harm in Europe studies (e.g., Hawton et al., 2002, 2006; Madge et al., 2008, 2011).

Appendix 3.4: Letter for Permission to Heads of Schools

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

Date

Address of Recipient School

Dear Sir / Madam,

Request for Permission to Conduct a Research on "Self-harm in Adolescents in Ghana" in your school.

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: 16-0373. Date: 06-Dec-2016.
University of Ghana, Legon, Ghana – Ref. №: ECH 078/16-17. Date: 18-Jan-2017.

Permission references:

Ghana Education Service, GAR Office – Ref. №: GES/GARISS5/358. Date: 09-Jan-2017.
Department of Social Welfare, National Head Office – Ref. №: A345. Date: 18-Jan-2017.

I am currently a Doctoral student in the School of Psychology, University of Leeds, UK, researching the topic, "Self-harm in Adolescents in Ghana", supervised by Professor Mitchell Waterman and Professor Allan House. The research involves conducting a self-report anonymous questionnaire survey with in-school and street-connected adolescents aged between 13 and 19 years in Accra, Ghana, followed by one-to-one interviews with selected few of the adolescents who respond to the survey (please see "Participant Information Sheet A" enclosed for more details).

I am writing to ask for your permission and assistance in accessing and selecting willing adolescents in your school to participate in this research.

This research has received ethical approval from the Research Ethics Committee, School of Psychology, University of Leeds, Leeds, UK (Ref. №: 16-0373. Date: 06-Dec-2016) and the Ethics Committee of the Humanities, University of Ghana, Legon, Accra, Ghana (Ref. №: ECH 078/16-17. Date: 18-Jan-2017). Further, this research has received permission from the Ghana Education Service, Greater Accra Regional Office (Ref. №: GES/GARISS5/358. Date: 09-Jan-2017) and the Department of Social Welfare, Ministry of Gender, Children and Social Protection, National Head Office (Ref. №: A345. Date: 18-Jan-2017). Attached is a copy of the permission from the Ghana Education Service, Greater Accra Regional Office, for your information.

Please feel free to contact me (see my contact details below) if you have further questions about the research or to inform me of your permission or otherwise.

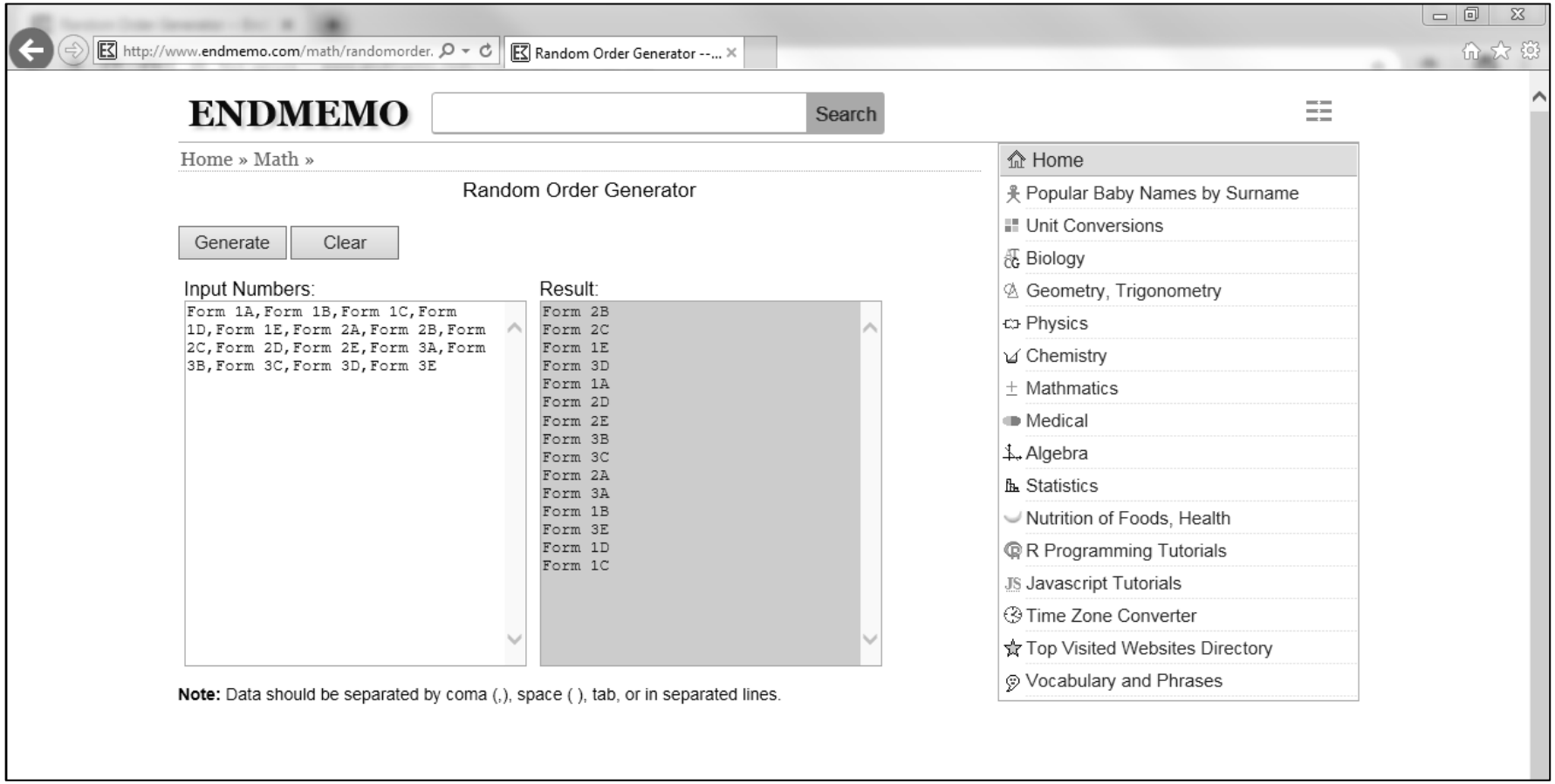
Your help with this is greatly appreciated.

Yours sincerely,
(sign)
Emmanuel Nii-Boye Quarshie (Primary Researcher)
PhD Student

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	Professor Mitchell Waterman University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Appendix 3.5: Screenshot of example of random selection of classes using the Random Order Generator tool (Endmemo, 2016; http://www.endmemo.com/math/randomorder.php).



Appendix 3.6: Participant Information Sheet to Adolescent Participants

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

PARTICIPANT INFORMATION SHEET A

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.

University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date: **09-Jan-2017**.

Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

[Version IV: 28-Feb-2017]

Introduction

You are being invited to take part in a research project titled "Self-Harm in Adolescents in Ghana". Before you make a decision whether you want to take part in this research, it is important for you to understand why we are doing the research and what it will involve. Please take a few minutes to read the following information carefully and discuss it with others if you wish. Please feel free to contact me if you have any questions or doubts.

What is the purpose of the research project?

Adolescents are the most vulnerable group to self-harm and suicidal behaviour across the world. However, in Ghana, although media reports show that self-harm and suicidal behaviours are common and frequent in adolescents, there is very little research on self-harm and suicide in adolescents. Therefore, this research seeks to establish an improved understanding about how common self harm is and why it happens - in-school adolescents and street-connected adolescents in Ghana. It is hoped that the findings and recommendations of this study will add to our knowledge and understanding of the problem and help us plan ways it might help people in Ghana. This research is part of a PhD project at the University of Leeds, UK, and has received ethical approval from the University of Leeds Psychology Ethics Committee, UK and the Ethics Committee of the Humanities, University of Ghana, Legon, Accra, Ghana.

Why have I been chosen?

This research is looking to invite adolescents aged between 13 and 19 years who are in-school or street-connected to participate. A small number of key other people (e.g., heads of

second cycle schools, teachers, street social workers, parents etc.) who work directly or live with these adolescents have also been invited to take part.

Do I have to take part?

No! Taking part in this study is entirely voluntary. This means it is entirely up to you to decide whether or not to take part. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form – a letter that indicates that you agree to take part. Even after you consent and agree to take part, you can still withdraw without giving a reason up to four months after the interviews, by which time it will be impossible to retract information because I would have incorporated your answers into analysis of the answers from a much larger group. However, it will be impossible to remove the responses you provide in the survey because the survey will be anonymous.

What will I do if I take part?

Step 1: If you agree to take part in this research I will ask you to answer an anonymous questionnaire on your lifetime personal experiences of self-harm. This survey will last between 25 and 30 minutes and will ask you for no information which would identify you.

Step 2: If you report in this survey (in step 1 above) that you have a personal experience of self-harm and you fill and sign the '**Consent Form D**' with your contact details, I will contact and invite you, within three days after the survey, for a one-to-one interview to discuss your actual self-harm experience and your views about helping adolescents who self-harm and how self-harm in adolescents can be prevented in Ghana. You and I will arrange a convenient time and location (quiet and private) that is both comfortable to you and suitable for the interview (preferably a nearby community centre, clinic, hospital, or charity organization) and meet to discuss your experience. This discussion will last between approximately 45 and sixty minutes.

Step 3: On the day of the interview, we will go over the information sheet and consent form to clarify any questions you might have. Generally, you will have full control of the discussion to talk about your experiences. I will ask you questions to help me understand your self-harm experiences and views. If you happen to travel to the venue for the interview, all your travel expenses will be reimbursed; please keep any bus tickets etc. Additionally, participants who take part in the interviews will be given a lunch voucher each worth GH¢10 for the long hours spent in taking part in both stages of the research.

What type of information will be sought from me?

Anonymous Questionnaire Survey: This will ask questions, and provide you with a list of answers from which you choose an answer that best fits your experience. Generally, the questions in this survey ask about negative life events (e.g., loss of a loved one, conflict with peers, break-ups, etc.); any experiences of self-harm and the means used; and reasons for self-harm. There are no right or wrong answers but the more honest you are in your

answers, the more accurate will the findings be. You may choose to answer all, some or none of the questions.

One-to-one Interview: The questions to be asked in the interview will be about your personal experiences of self-harm. I will ask you to tell me your story right through from what happened before you harmed yourself; the plans you made to harm yourself; the means you used to harm yourself and the intentions you had for harming yourself. I will also ask for your views about how adolescents who harm themselves can be helped, and how self-harm and suicidal behaviour in adolescents can be prevented in Ghana. We may touch on some painful memories and anxious moments. But you have control over the line of questioning and responses. Again, there are no right or wrong answers, and you may skip one or more questions.

Will I be recorded and how will the recording be used?

If you agree to participate in the interview, I will ask for your permission from the 'Consent Form A' to record the interview through audio-recording. The recording is needed in order to allow me to fully listen to what you are saying and for me to be fully engaged with you during the interview. The recordings will be typed up to allow me to study what you said during the interview in detail, and then the recordings will be deleted permanently. Again, I will ask your permission in the 'Consent Form A' to use quotations (that is, small sections of what you said) from what you said in reports of the research which I will include in my doctoral thesis, publications, and conference presentations. Your identity will be masked because I will use a different name and I will omit or change details which together might have increased the chance of someone identifying you.

Will my taking part in the research be kept confidential?

All the information that I collect about you during this research will be kept strictly confidential. Only copies without your name on will be kept and used for analysis. Signed consent forms will be sealed in an envelope and placed in a locked filing cabinet. Completed background information and survey questionnaires will be kept separately from the transcripts and in a locked filing cabinet so that only the research team (me, my two supervisors, who are both professors in my university) will be able to link real participant names with anonymised transcripts for the purposes of the research. Once the research is complete, these materials will be destroyed.

I am obliged to let you know that there are limits to confidentiality in research under some very unusual and specific circumstances: if, during the interview, you reveal any intentions of killing yourself or harming or killing others, or tell me about any serious or sufficiently alarming criminal activity that you have been involved in, or reveal any information which leads me to think that you are in danger from others, I will have to alert the appropriate authorities (e.g., School head, the Department of Social Welfare or the Ghana Police). However, I assure you that this kind of information is not sought in my research and I do not expect that this will be an issue at all.

What are the possible disadvantages or risks of taking part?

You may feel upset answering some questions about your self-harm. It is also likely that memories of certain painful feelings may be recalled. However, you have full control on how much detail you give and over the questions you answer. Additionally, an arrangement for the availability of four professional psychologists (two Counsellors and two Clinical Psychologists) has been made: you can let me know if you want to see one of them for help. This service will be accessed free of charge for you, but the consent of your parent/guardian will be sought before this service will be offered if you are aged between 13 and 17 years.

What are the possible benefits of taking part?

The major benefit of participating in this study is to contribute knowledge towards understanding and helping to reduce self-harm and suicide in adolescents in Ghana. The immediate benefit is that, participating in this research will provide you education about self-harm in adolescents in Ghana and grant you relief from certain painful emotions.

When is the deadline for withdrawing?

You can withdraw at any time, without giving a reason, from this research. But it is not possible to withdraw your responses from the questionnaire survey, but it doesn't matter because all the survey responses are grouped and anonymous. However, if you take part in the interviews, withdrawal can be at any time up to four months after the interviews to request for your responses to be removed.

What will happen to the research results?

The results of this research will go towards the award of a PhD which is projected to be completed in December 2019, and may be included in relevant academic journal publications and reports to relevant authorities in Ghana. You would never be identified in any of these documents and any information you provide would only be merged with information from other participants, or, in the case of selected quotations, would only be presented in such a way that you could not be identified.

Has the research project received ethical approval?

This research has received ethical approval from the Research Ethics Committee, School of Psychology, University of Leeds, Leeds, UK (Ref. №: 16-0373. Date: 06-Dec-2016) and the Ethics Committee of the Humanities, University of Ghana, Legon, Accra, Ghana (Ref. №: ECH 078/16-17. Date: 18-Jan-2017.). Further, this research has received permission from the Ghana Education Service, Greater Accra Regional Office (Ref. №: GES/GARISS5/358. Date: 09-Jan-2017) and the Department of Social Welfare, Ministry of Gender, Children and Social Protection, National Head Office (Ref. №: A345. Date: 18-Jan-2017).

Who is organising/funding the research?

The Leeds International Research Scholarships (LIRS), University of Leeds, UK, is funding this research.

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; or, enquarshie@gmail.com	**Professor Mitchell Waterman** University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Further, if you have any questions about your rights as a research participant in this study you may contact:

The Chair, School of Psychology Ethics Review Committee,
University of Leeds, UK, at
Ethics.Committee@webhost02h.leeds.ac.uk

OR

The Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

Appendix 3.7: Consent Form to Adolescent Participants

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

Consent Form – A

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.

University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date: **09-Jan-2017**.

Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

[Version IV: 28-Feb-2017]

Consent to take part in 'Self-harm in Adolescents in Ghana' research

Add your initials next to the statement if you agree

1	I confirm that I have read and understood the information sheet dated February 27, 2017 explaining the above research project and I have had the opportunity to ask questions about the research.	
2	I understand that taking part in this research is voluntary and that I am free to withdraw at any time, without giving a reason, even after I have completed the questionnaire. I understand that it is not possible to withdraw my responses from the questionnaire survey but it doesn't matter because all the survey responses are grouped and anonymous. However, if I take part in the interviews, withdrawal can be at any time up to four months after the interviews to request for my responses to be removed. In addition, should I not wish to answer any particular question or questions, I am free not to answer them. Please let me know about your decision to withdraw. Primary Researcher: Emmanuel Nii-Boye Quarshie Tel: 00447778085224 [UK]; 00233240446684 [Ghana] E-mail: psenbq@leeds.ac.uk; or enquarshie@gmail.com	

3	I agree to the interview being audio-recorded only.	
4	I understand that there are no significant risks involved in this research. However, if painful memories or emotions are caused by the research, the researcher has provided for me to see a professional psychologist free of charge. If I wish to access this free psychological service and I am aged between 13 and 17 years, the researcher will have to obtain the consent of my parent/guardian before I can access this psychological service.	
5	I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research. I understand that my responses will be kept strictly private (confidential) and not shared with anybody outside the research team unless I and my parent/guardian agree that it be made public.	
6	I understand that under some very unusual and specific circumstances, outlined in the information sheet, researchers may share my responses with others.	
7	I agree for the information collected from me to be stored and used in relevant future research in an anonymous form, that is, without my name attached.	
8	I understand that other genuine researchers will have access to my answers only if they agree to preserve the confidentiality of the information as requested in this form.	
9	I understand that other genuine researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	
10	I agree to take part in the above research project and will inform the lead researcher should my contact details change.	

Name of participant	
Participant's signature	
Date	
Name of lead researcher	
Signature	
Date*	

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	Professor Mitchell Waterman University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Further, if you have any questions about your rights as a research participant in this study you may contact:

The Chair, School of Psychology Ethics Review Committee, University of Leeds, UK, at Ethics.Committee@webhost02h.leeds.ac.uk

OR

The Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

*To be signed and dated in the presence of the participant.

Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the letter/ pre-written script/ information sheet and any other written information provided to the participants. A copy of the signed and dated consent form should be kept with the project's main documents which must be kept in a secure location.

Appendix 3.8: Letter for Consent to Parents/Guardians

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

Date.

Dear Sir / Madam,

Request for Consent to Your Ward's Participation in a Research on 'Self-harm in Adolescents in Ghana'.

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.
University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date: **09-Jan-2017**.
Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

I am currently a Doctoral student in the School of Psychology, University of Leeds, UK, researching the topic, "Self-harm in Adolescents in Ghana", supervised by Professor Mitchell Waterman and Professor Allan House. The research involves conducting a self-report anonymous questionnaire survey with in-school and street-connected adolescents aged between 13 and 19 years in Accra, Ghana, followed by one-to-one interviews with selected few of the adolescents who respond to the survey (please see *'**Participant Information Sheet A**'* enclosed for more details).

I am writing to ask for your consent to allow your ward to participate in this research.

This research has received ethical approval from the Research Ethics Committee, School of Psychology, University of Leeds, Leeds, UK (Ref. №: 16-0373. Date: 06-Dec-2016) and the Ethics Committee of the Humanities, University of Ghana, Legon, Accra, Ghana (Ref. №: ECH 078/16-17. Date: 18-Jan-2017). Further, this research has received permission from the Ghana Education Service, Greater Accra Regional Office (Ref. №: GES/GARISS5/358. Date: 09-Jan-2017) and the Department of Social Welfare, Ministry of Gender, Children and Social Protection, National Head Office (Ref. №: A345. Date: 18-Jan-2017).

Enclosed are two copies of '**Consent Form C**' for parents/guardians of adolescent participants. Please sign each of these forms to indicate your consent for your ward's participation in this research. Keep a copy (for your records) and return the other copy to me through your ward within three working days after receiving this letter.

Please feel free to contact me (see my contact details below) if you have further questions about the research or to inform me of your consent or otherwise.

Your help with this is greatly appreciated.

Yours sincerely,

(sign)

Emmanuel Nii-Boye Quarshie (Primary Researcher)
PhD Student

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	**Professor Mitchell Waterman** University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

[Version IV: 28-Feb-2017]

Appendix 3.9: Consent Form to Parent/Guardian

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

Consent Form – C [Parents/Guardians**]**

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.

University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date: **09-Jan-2017**.

Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

[Version IV. 28-Feb-2017]

Consent to take part in 'Self-harm in Adolescents in Ghana' research

Add your initials next to the statement if you agree

1	I confirm that I have read and understood the information sheet dated February 27, 2017 explaining the above research project and I have had the opportunity to ask questions about the research.	
2	I understand that my ward's participation in this research is voluntary and that my ward is free to withdraw at any time, without giving a reason, even after my ward has completed the questionnaire. I understand that it is not possible to withdraw my ward's responses from the questionnaire survey but it doesn't matter because all the survey responses are grouped and anonymous. However, if my ward takes part in the interviews, withdrawal can be at any time up to four months after the interviews to request for my ward's responses to be removed. My ward may let the researcher know of his/her decision to withdraw from the research through any of the following contact details: Primary Researcher: Emmanuel Nii-Boye Quarshie Tel: 00447778085224 [UK]; 00233240446684 [Ghana] E-mail: psenbq@leeds.ac.uk; enquarshie@gmail.com	
3	I agree to the interview with my ward being audio-recorded only.	

4	I understand that there are no significant risks involved in this research. However, if memories of certain painful feelings evoked during the research make my ward experience any significant discomfort or emotional breakdown, the researcher has provided for my ward to see a professional psychologist free of charge. But if my ward wishes to access this free psychological service and my ward is aged between 13 and 17 years, the researcher will have to obtain my consent before my ward can access this psychological service.	
5	I give permission for members of the research team to have access to my ward's anonymised responses. I understand that my ward's name will not be linked with the research materials, and my ward will not be identified or identifiable in the report or reports that result from the research. I understand that my ward's responses will be kept strictly confidential unless my ward and I agree that it be made public.	
6	I understand that there are limits to confidentiality in this research under some very unusual and specific circumstances: if, during the research, my ward reveals any intentions of killing himself/herself or harming or killing others, or tells the researcher about any serious or sufficiently alarming criminal activity that he/she has been involved in, the researcher will have to alert the appropriate authorities (e.g., School head, the Department of Social Welfare or the Ghana Police). However, the assurance is that this kind of information is not sought in this research and as such not expected to be an issue at all.	
7	I agree for the data collected from my ward to be stored and used in relevant future research in an anonymised form.	
8	I understand that other genuine researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.	
9	I understand that other genuine researchers may use my ward's words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	

10	I agree to my ward's participation in the above research project and will inform the lead researcher should my contact details change.	

Name of parent/guardian of participant	
Name of participant	
Signature of parent/guardian	
Date	
Name of lead researcher	
Signature of lead researcher	
Date*	

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	**Professor Mitchell Waterman** University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Further, if you have any questions about your rights as a research participant in this study you may contact:

The Chair, School of Psychology Ethics Review Committee, University of Leeds, UK, at Ethics.Committee@webhost02h.leeds.ac.uk

OR

The Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

*To be signed and dated in the presence of the participant.

Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the letter/ pre-written script/ information sheet and any other written information provided to the participants. A copy of the signed and dated consent form should be kept with the project's main documents which must be kept in a secure location.

Appendix 3.10: Consent Form for Invitation to Interview with Ado

Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

Consent Form D

[Version IV: 28-Feb-2017]

Title of Project: Self-harm in Adolescents in Ghana

Name of Primary Researcher: Emmanuel Nii-Boye Quarshie

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.

University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date**: 09-Jan-2017**.

Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

I confirm that Emmanuel Nii-Boye Quarshie, Doctoral Research student from the University of Leeds, Leeds, UK, **may** contact me regarding the above research project for a discussion in a one-to-one interview, using the details below:

Name: ……

Telephone Number: ……

Email (optional)**:** ……

Address (optional)**:** ……

_____	_____	_____
Name of Participant	Signature	Date

_____	_____	_____
Name of person taking consent	Signature	Date

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	Professor Mitchell Waterman University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Further, if you have any questions about your rights as a research participant in this study you may contact:
The Chair, School of Psychology Ethics Review Committee, University of Leeds, UK, at Ethics.Committee@webhost02h.leeds.ac.uk OR
The Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

Appendix 3.11: Some adolescent students completing the questionnaire survey

Appendix 3.12: Letter for permission to Heads of Charity Organisations

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

Date

Address of Charity Organisation

Dear Sir / Madam,

Request for Permission to Conduct a Research on 'Self-harm in Adolescents in Ghana' in Your Organisation.

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: 16-0373. Date: 06-Dec-2016.
University of Ghana, Legon, Ghana – Ref. №: ECH 078/16-17. Date: 18-Jan-2017.

Permission references:

Ghana Education Service, GAR Office – Ref. №: GES/GARISS5/358. Date: 09-Jan-2017.
Department of Social Welfare, National Head Office – Ref. №: A345. Date: 18-Jan-2017.

I am currently a Doctoral student in the School of Psychology, University of Leeds, UK, researching the topic, "Self-harm in Adolescents in Ghana", supervised by Professor Mitchell Waterman and Professor Allan House. The research involves conducting a self-report anonymous questionnaire survey with in-school and street-connected adolescents aged between 13 and 19 years in Accra, Ghana, followed by one-to-one interviews with selected few of the adolescents who respond to the survey (please see *'**Participant Information Sheet A**'* enclosed for more details).

I am writing to ask for your permission and assistance in accessing and selecting willing street-connected adolescents who attend your facility, shelter or drop-in centre to participate in this research.

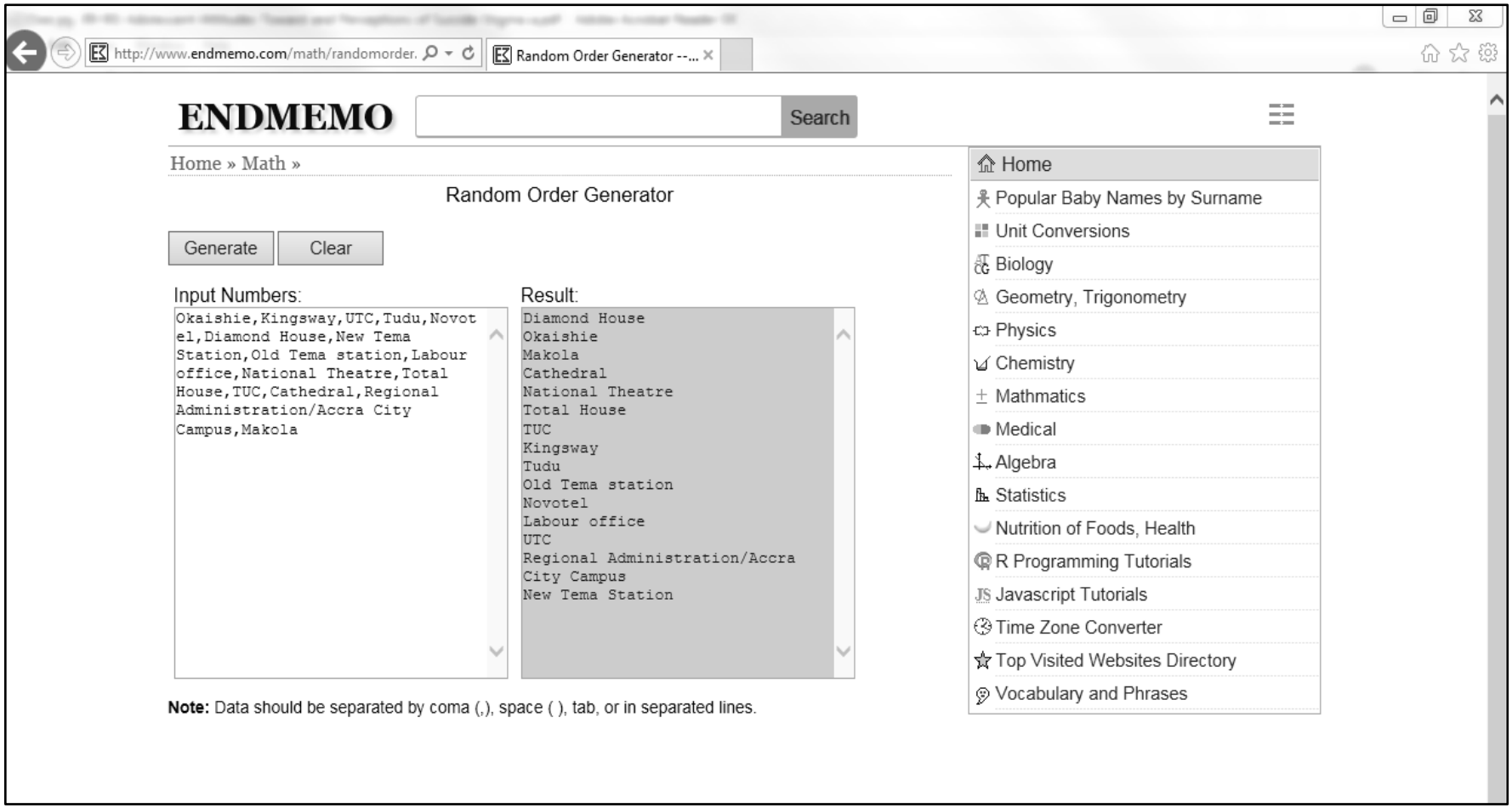
This research has received ethical approval from the Research Ethics Committee, School of Psychology, University of Leeds, Leeds, UK (Ref. №: 16-0373. Date: 06-Dec-2016) and the Ethics Committee of the Humanities, University of Ghana, Legon, Accra, Ghana (Ref. №: ECH 078/16-17. Date: 18-Jan-2017). Further, this research has received permission from the Ghana Education Service, Greater Accra Regional Office (Ref. №: GES/GARISS5/358. Date: 09-Jan-2017) and the Department of Social Welfare, Ministry of Gender, Children and Social Protection, National Head Office (Ref. №: A345. Date: 18-Jan-2017). Attached is a copy of the permission from the Department of Social Welfare, National Head Office, for your information.

Please feel free to contact me (see my contact details below) if you have further questions about the research or to inform me of your permission or otherwise.
Your help with this is greatly appreciated.
Yours sincerely,
(sign)
Emmanuel Nii-Boye Quarshie (Primary Researcher)
PhD Student

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	Professor Mitchell Waterman University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Appendix 3.13: Screenshot of example of random selection of street census enumeration areas using the Random Order Generator tool (Endmemo, 2016; http://www.endmemo.com/math/randomorder.php)**.**



Appendix 3.14: Researcher administering the questionnaire survey to street-connected adolescents at a charity facility.

Appendix 3.15. Coding of exposure variables

Variable	Item	Coding on questionnaire	Recoding
Socio-demographics			
Adolescent type	The data was divided into two sub-groups: "in-school adolescents" and "street-connected adolescents".	(1) In-school (2) Street-connected	In-school = 0 Street-connected = 1
Gender	What is your gender?	(1) Male (2) Female	Male = 0 Female = 1
Age	What is your age?	13-21 years (coded continuously)	13-15-years = 0 16-17 years = 1 18-21 years = 2
Street life age*	How long have you been living in this area?	(1) 6months-1year (2) 2-5years (3) More than 5 years	6 months – 1 year = 0 > 1 year = 1
Still have contact with family*	Do you still have contact with your family?	(0) No (1) Yes	Unchanged
Still in School*	Do you still go to school?	(0) No (1) Yes	Unchanged
Educational background*	What is your highest educational background?	(1) No formal education (2) Primary school (3) Junior high school (4) Senior high school	No formal education = 0 Primary or Junior high school = 1
Religious group	What is your religious group?	(1) Christian (2) Muslim (3) African Traditional Religion (4) Other	Christian = 0 Muslim = 1
Employment status	What is your employment status?	(1) Unemployed (2) Self-employed (3) I work for someone (4) Other	Unemployed = 0 Employed = 1

Appendix 3.15 (continued)

Variable	Item	Coding on questionnaire	Recoding
Socio-demographics (continued)			
Living arrangement	What is your living arrangement? I live	(1) alone (2) with my father and mother (3) with my father only (4) with my mother only (5) with my sister/brother (6) with an extended relative (7) with my partner (8) Other	with one or both parents = 0 with other relative = 1 alone or with other person = 2
Primary caretaker	Who is most responsible for taking care of your needs?	(1) Myself (2) Both my father and mother (3) My father only (4) My mother only (5) My sister/brother (6) An extended relation (7) Other	One or both parents = 0 Other relative = 1 Myself or with other person = 2
Primary caretaker's employment status	What is the employment status of parent(s) or guardian?	(1) Self-employed (2) Employed (3) Unemployed (4) Retired (5) Other	Unemployed = 0 Employed = 1
Personal level and lifestyle factors			
Sexual orientation	How would you describe your sexual orientation?	(1) Heterosexual (2) Lesbian (3) Gay (4) Bisexual (5) Transgender	Heterosexual = 0 Non-heterosexual = 1
Sexual orientation worries	Have you had worries about your sexual orientation during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged

Appendix 3.15 (continued)

Variable	Item	Coding on questionnaire	Recoding
Personal level and lifestyle factors (continued)			
Cigarettes smoked weekly	How many cigarettes do you smoke in a typical week?	(1) I never smoke (2) I used to smoke, but I have stopped. (3) Up to 5 cigarettes a week (4) 6–20 cigarettes a week (5) 21–50 cigarettes a week (6) More than 50 cigarettes a week	Never/stopped = 0 1 or more cigarettes = 1
Weekly alcoholic drinks	How many alcoholic drinks do you have in a typical week?	(1) I never drink alcohol (2) One drink (3) 2-5 drinks (4) 6-10 drinks (5) 11-20 drinks (6) More than 20 drinks	Never drink = 0 1 or more drinks = 1
Illicit drug used in the past year	Please tick any of the following types of illicit drug you have taken during the past 12 months or 1 year.	(1) I never take illicit drugs (2) Marijuana/Wee/Ganja (3) Heroin / opium / morphine (4) Speed/LSD/ amphetamine (5) Cocaine / 'white powder'/ 'coke' (6) Other illicit drugs and substances (not including medication).	Never take illicit drugs = 0 Took illicit drug = 1
Self-harm prior to the past 12 months	Did you ever in your life actually intentionally harm yourself before the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Age at first episode / onset of self-harm	How old were you the first time you actually harmed yourself?	8-20 years (coded continuously)	Unchanged

Appendix 3.15 (continued)

Variable	Item	Coding on questionnaire	Recoding
Family related factors			
Family Structure	How will you describe your family structure?	(1) My father has one wife (2) My father has more than one wife	My father has 1 wife = 0 My father has > 1 wife = 1
Sib size	How many siblings do you have?	(1) I am an only child (2) 1 sibling (3) 2 siblings (4) 3 siblings (5) 4 siblings (6) 5 siblings (7) 6 siblings (8) More than 6 siblings	0 – 4 siblings = 0 > 4 siblings = 1
Parental separation/divorce	Have your parents separated or divorced during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Conflict with parent	Have you had any serious arguments or fights with either or both of your parents during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Parental conflict	Have your parents had any serious arguments or fights during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Serious accident or illness of family member	Have you or any member of your family had a serious illness or accident during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Death of family member	Has anyone among your immediate family (mother, father, brother, or sister) died during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Family suicide	Has anyone among your family killed himself / herself during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Family attempted suicide	Has anyone among your family tried killing himself/herself or intentionally harmed himself/herself during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged

Appendix 3.15 (continued)

Variable	Item	Coding on questionnaire	Recoding
School related factors			
School residential status	If you are still in school, are you a boarding or day student?	(1) Boarding (2) Day student	Boarding = 0 Day student = 1
School work problems	Have you had problems keeping up with school work during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Truancy	During the past 12 months, on how many days were you absent from school without permission?	(1) 0 day (2) 1-5 days (3) 5-20 days (4) Other	0-5 days = 0 > 5 days = 1
Sacked from school	Have you been sacked from school because you owed fees during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Interpersonal level factors			
In romantic relationship	Do you have a boyfriend or girlfriend?	(0) No (1) Yes	Unchanged
Serious relationship problems	Have you had any serious problems with your boyfriend or girlfriend during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Breakup	Have you had a break-up with a boyfriend or girlfriend during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Difficulty making/keeping friends	Have you had difficulty in making friends or keeping friends during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Conflict with friends	Have you had any serious arguments or fights with friends during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Serious accident or illness of close friend	Has any close friend had a serious illness or accident during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Death of Friend	Has any close friend to you died during the past year?	(0) No (1) Yes	Unchanged
Friend suicide	Has anyone among your friends killed himself / herself during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged

Appendix 3.15 (continued)

Variable	Item	Coding on questionnaire	Recoding
Interpersonal level factors (continued)			
Friend attempted suicide	Has anyone among your close friends tried killing himself/herself or intentionally harmed himself/herself during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Bullied	Have you been bullied at school or in your area during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Physically abused	Have you been seriously physically beaten during the past year?	(0) No (1) Yes	Unchanged
Sexually abused	Has anyone forced you (i.e. physically or verbally) to engage in sexual activities against your will during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Trouble with police	Have you been in trouble with the police during the past 12 months or 1 year?	(0) No (1) Yes	Unchanged
Other negative life events	Has any other negative or unpleasant event occurred involving you, your family, or your close friends?	(0) No (1) Yes	Unchanged
Total negative life events during the past 12 months	–	–	≤ 5 negative events = 0 6 – 10 negative events = 1 > 10 negative events = 2

Note

* Item applies to street-connected adolescents only.

Appendix 3.16. List of Negative Events during the past 12 months

№	Negative Event
1	Difficulty making / keeping friends (yes)
2	Conflict with Friends (yes)
3	Serious relationship problems (yes)
4	Breakup (yes)
5	School work problems (yes)
6	Sacked from school (yes)
7	Bullied (yes)
8	Parental separation/divorced (yes)
9	Conflict with parents (yes)
10	Parental conflict (yes)
11	Serious accident or illness of family member (yes)
12	Serious accident or illness of close friend (yes)
13	Physically abused (yes)
14	Trouble with police (yes)
15	Death of family member (yes)
16	Death of friend (yes)
17	Family suicide (yes)
18	Friend suicide (yes)
19	Family attempted suicide (yes)
20	Friend attempted suicide (yes)
21	Worried about sexual orientation (yes)
22	Sexually abused (yes)
23	Truancy
24	Other Negative live events (yes)

Appendix 3.17. School-specific factors associated with self-harm

To examine the associations between school-specific exposure variables and self-harm, two multivariable analyses were performed: binary logistic regression (to assess the school-specific exposure variables associated with self-harm during the past 12 months) and negative binomial regression (to assess the school-specific exposure variables associated with the frequency/counts of self-harm during the past 12 months). It must be noted though that in the initial models, 'weekly cigarettes smoked' was associated with very high or infinite odds ratio (OR) and confidence interval (CI), suggesting an existence of sparse data bias – inadequate frequencies within cells of the cross-tabulations of the exposure variable (weekly cigarettes smoked) response categories and the outcome variables (Greenland, Mansournia & Altman, 2016). Hence, in the final models (Appendix 3.17A – 3.17B), 'weekly cigarettes smoked' was excluded due to insufficient cell frequency (< 5) and as further collapsing of the response categories was not meaningfully possible (Greenland et al., 2016; Peduzzi et al., 1995, 1996).

Appendix 3.17A. Binary logistic regression assessing the associations between school-specific variables and self-harm during the past 12 months.

Variable	Model 1 AOR (95% CI)	Model 2 AOR (95% CI)
Gender	1.21 (0.84-1.75)	1.39 (0.99-1.95)
Age group:		
13 – 15 years	Reference	Reference
16 – 17 years	0.89 (0.50-1.62)	0.98 (0.55-1.75)
18 – 21 years	0.63 (0.32-1.24)	0.60 (0.31-1.17)
Religious group	0.87 (0.43-1.76)	0.99 (0.53-1.87)
Employment status	0.52 (0.20-1.38)	0.51 (0.19-1.29)
Living arrangement:		
One or both parents	Reference	Reference
Other relative	1.02 (0.59-1.73)	0.90 (0.55-1.48)
Alone or with other person	1.99 (0.95-4.18)	1.51 (0.74-3.07)
Primary caretaker:		
One or both parents	Reference	Reference
Other relative	1.23 (0.64-2.38)	1.09 (0.59-2.00)
Myself or other person	0.49 (0.22-1.12)	0.63 (0.29-1.35)
Primary caretaker's employment status	0.60 (0.32-1.11)	0.65 (0.37-1.15)
Sexual orientation	3.19 (1.33-7.64) **	2.87 (1.25-6.56) *
Weekly alcohol use	1.63 (1.01-2.62) *	1.82 (1.15-2.87) *
Illicit drug use	1.47 (0.55-3.90)	1.39 (0.56-3.42)
Family structure	1.13 (0.73-1.74)	1.16 (0.79-1.68)
Sib size	0.89 (0.59-1.35)	0.85 (0.58-1.26)
School residential status	1.08 (0.68-1.69)	1.11 (0.73-1.70)
In romantic relationship	1.56 (1.03-2.36) *	1.29 (0.91-1.83)
Self-harm prior to the past 12 months	26.73 (17.66-40.46) ***	25.98 (17.62-38.31) ***
Total negative events during the past 12 months:		
≤ 5	–	Reference
6 – 10	–	3.14 (2.11-4.67) ***
> 10	–	5.96 (3.60-9.87) ***

Appendix 3.17A. (continued)

Variable	Model 1 AOR (95% CI)	Model 2 AOR (95% CI)
Sexual orientation worries	1.29 (0.68-2.45)	–
Parental separation/divorce	1.16 (0.76-1.76)	–
Conflict with parents	1.91 (1.27-2.87) **	–
Parental conflict	1.09 (0.75-1.58)	–
Serious accident or illness of family member	0.75 (0.51-1.10)	–
Death of family member	0.79 (0.52-1.19)	–
Family member suicide	0.43 (0.17-1.11)	–
Family member attempted suicide	2.58 (1.52-4.37) ***	–
School work problems	1.50 (1.04-2.17) *	–
Truancy	0.54 (0.28-1.03)	–
Sacked from school	0.85 (0.59-1.24)	–
Serious romantic relationship problems	0.86 (0.51-1.45)	–
Breakup	1.14 (0.73-1.79)	–
Difficulty making / keeping friends	1.28 (0.89-1.86)	–
Conflict with friends	1.05 (0.72-1.54)	–
Serious accident or illness of close friend	1.14 (0.78-1.66)	–
Death of friend	1.23 (0.83-1.83)	–
Friend suicide	0.74 (0.27-2.02)	–
Friend attempted suicide	2.72 (1.64-4.51) ***	–
Bullied	1.49 (1.02-2.17) *	–
Physically abused	1.71 (1.18-2.49) **	–
Sexually abused	1.19 (0.78-1.84)	–
Trouble with police	1.48 (0.62-3.50)	–
Other negative events during the past 12 months	1.19 (0.79-1.79)	–

Notes:

- AOR = Adjusted odds ratio
- CI = Confidence interval
- *** p <0.001, ** p <0.01, * p < 0.05

- Model 1 assesses the associations between school adolescents' characteristics (socio-demographic characteristics and individual negative events during the past 12 months) and self-harm during the past 12 months [Model 1: $\chi^2_{(df = 42)} = 675.19$, p <0.001. Cox & Snell $R^2 = 0.329$; Nagelkerke $R^2 = 0.536$; Homer & Lemeshow test = 0.092; Cases correctly predicted = 89.9%].

- Model 2 assesses the associations between school adolescents' characteristics (socio-demographic characteristics and total negative events during the past 12 months) and self-harm during the past 12 months [Model 2: $\chi^2_{(df = 20)} = 610.40$, p <0.001. Cox & Snell $R^2 = 0.300$; Nagelkerke $R^2 = 0.489$; Homer & Lemeshow test = 0.794; Cases correctly predicted = 89.1%].

Appendix 3.17B. Negative binomial regression assessing associations between school-specific exposure variables and frequency/counts of self-harm during the past 12 months.

Variable	Model 1 AIRR (95% CI)	Model 2 AIRR (95% CI)
Gender:		
Male	Reference	Reference
Female	1.17 (0.91-1.51)	1.28 (1.01-1.62) *
Age group:		
13 – 15 years	Reference	Reference
16 – 17 years	0.85 (0.56-1.29)	0.85 (0.57-1.25)
18 – 21 years	0.73 (0.46-1.17)	0.66 (0.42-1.01)
Religious group:		
Christian	Reference	Reference
Muslim	0.74 (0.45-1.23)	0.79 (0.49-1.27)
Employment status:		
Unemployed	Reference	Reference
Employed	0.56 (0.29-1.07)	0.59 (0.32-1.10)
Living arrangement:		
One or both parents	Reference	Reference
Other relative	1.15 (0.79-1.69)	1.04 (0.73-1.49)
Alone or with other person	1.90 (1.15-3.16) *	1.43 (0.88-2.32)
Primary caretaker:		
One or both parents	Reference	Reference
Other relative	1.04 (0.67-1.61)	0.98 (0.65-1.49)
Myself or other person	0.64 (0.38-1.08)	0.79 (0.49-1.27)
Primary caretaker's employment status:		
Unemployed	Reference	Reference
Employed	0.96 (0.63-1.46)	0.94 (0.63-1.40)
Sexual orientation:		
Heterosexual	Reference	Reference
Non-heterosexual	1.24 (0.73-2.09)	1.17 (0.71-1.93)
Weekly alcohol use:		
Never drink	Reference	Reference
One or more drinks	1.51 (1.09-2.08) *	1.65 (1.21-2.24) **
Illicit drug use:		
Never take illicit drug	Reference	Reference
Took illicit drug	0.99 (0.57-1.71)	1.23 (0.73-2.02)
Family structure:		
My father has one wife	Reference	Reference
My father has more than one wife	1.06 (0.79-1.42)	1.06 (0.82-1.37)
Sib size:		
0 – 4 siblings	Reference	Reference
> 4 siblings	0.74 (0.55-0.99) *¬	074 (0.56-0.98) *¬
School residential status:		
Boarding	Reference	Reference
Day student	1.10 (0.81-1.51)	1.15 (0.86-1.54)

Appendix 3.17B. (continued)

Variable	Model 1 AIRR (95% CI)	Model 2 AIRR (95% CI)
In romantic relationship:		
No	Reference	Reference
Yes	1.43 (1.07-1.91) *	1.08 (0.85-1.38)
Self-harm prior to the past 12 months:		
No	Reference	Reference
Yes	10.30 (8.05-13.19) ***	10.98 (8.67-13.90) ***
Total negative events during the past 12 months:		
≤ 5	–	Reference
6 – 10	–	2.52 (1.88-3.39) ***
> 10	–	3.70 (2.61-5.24) ***
Sexual orientation worries:		
No	Reference	–
Yes	1.31 (0.88-1.93)	–
Parental separation/divorce:		
No	Reference	–
Yes	1.01 (0.76-1.34)	–
Conflict with parents:		
No	Reference	–
Yes	1.36 (1.02-1.81) *	–
Parental conflict:		
No	Reference	–
Yes	1.34 (1.03-1.75) *	–
Serious accident or illness of family member:		
No	Reference	–
Yes	1.09 (0.84-1.43)	–
Death of family member:		
No	Reference	–
Yes	0.91 (0.69-1.21)	–
Family member suicide:		
No	Reference	–
Yes	0.53 (0.29-0.98) *¬	–
Family member attempted suicide:		
No	Reference	–
Yes	1.17 (0.83-1.65)	–
School work problems:		
No	Reference	–
Yes	1.20 (0.93-1.56)	–
Truancy:		
0 – 5 days	Reference	–
> 5 days	0.80 (0.54-1.18)	–
Sacked from school:		
No	Reference	–
Yes	0.98 (0.75-1.27)	–
Serious romantic relationship problems:		
No	Reference	–
Yes	0.68 (0.47-0.98) *¬	–

Appendix 3.17B. (continued)

Variable	Model 1 AIRR (95% CI)	Model 2 AIRR (95% CI)
Breakup		
No	Reference	–
Yes	1.19 (0.87-1.63)	–
Difficulty making/keeping friends:		
No	Reference	–
Yes	1.40 (1.09-1.81) **	–
Conflict with friends:		
No	Reference	–
Yes	0.96 (0.73-1.27)	–
Serious accident or illness of close friend:		
No	Reference	–
Yes	0.89 (0.69-1.15)	–
Death of friend:		
No	Reference	–
Yes	1.04 (0.79-1.37)	–
Friend suicide:		
No	Reference	–
Yes	1.33 (0.76-2.32)	–
Friend attempted suicide:		
No	Reference	–
Yes	1.82 (1.31-2.54) ***	–
Bullied:		
No	Reference	–
Yes	1.30 (1.00-1.69) *	–
Physically abused:		
No	Reference	–
Yes	1.18 (0.90-1.53)	–
Sexually abused:		
No	Reference	–
Yes	1.08 (0.80-1.45)	–
Trouble with police:		
No	Reference	–
Yes	1.52 (0.89-2.59)	–
Other negative events during the past 12 months:		
No	Reference	–
Yes	1.44 (1.11-1.88) **	–

Notes:

- AIRR = Adjusted incidence rate ratio
- CI = Confidence interval
- *** p <0.001, ** p <0.01, * p < 0.05
- ¬ = Inverse relationship [negative beta (β) value]

- Model 1 assesses the associations between school adolescents' characteristics (socio-demographic characteristics and individual negative events during the past 12 months) and frequency/counts of self-harm during the past 12 months.

- Model 2 assesses the associations between school adolescents' characteristics (socio-demographic characteristics and total negative events during the past 12 months) and the frequency/counts of self-harm during the past 12 months.

Appendix 3.18. Street-specific factors associated with self-harm

To examine the associations between street-specific exposure variables and self-harm, two multivariable analyses were performed: binary logistic regression (to assess the street-specific exposure variables associated with self-harm during the past 12 months) and negative binomial regression (to assess the street-specific exposure variables associated with the frequency/counts of self-harm during the past 12 months).

Potential exposure variables with a minimum cell size of five (Vittinghoff & McCulloch, 2007) were entered into the initial models. However, some of the exposure variables in the initial models were associated with very high or infinite odds ratios (ORs) and confidence intervals (CIs), suggesting a plausible existence of sparse data bias – inadequate frequencies within cells of the cross-tabulations of the exposure variable categories and the outcome variables (Greenland, Mansournia & Altman, 2016). Exposure variables with insufficient cell frequency yield very large or infinite ORs and CIs and as such render the logistic regression model invalid and unstable (Greenland et al., 2016; Greenland, Schwartzbaum & Finkle, 2000; Pavlou et al., 2015; Peduzzi, Concato, Feinstein & Holford, 1995; Vittinghoff & McCulloch, 2007). Visual inspection of the cross-tabulations of the categories of the exposure variables and the outcome variables showed sparse data bias, with insufficient frequencies ranging from zero to nine (0 – 9) across some of the cells. Therefore, in the final models, it was decided to include only exposure variables with adequate cell size of at least 10 counts and exclude those with low cell size when further collapsing of categories yielded no meaningful categories (Greenland et al., 2016; Peduzzi et al., 1995, 1996).

On the basis of the foregoing reasons, in building the final multivariable models (Appendix 3.18A – 3.18B) examining the associations between street-specific exposure variables and self-harm the following exposure variables were excluded: age group, street life age, still in school, educational background, employment status, living arrangement, primary caretaker, sexual orientation, sexual orientation worries, illicit drug use in the past 12 months, parental conflict, family member suicide, family member attempted suicide, school residential status, school work problems, truancy, sacked from school, conflict with friends, death of friend, friend suicide, bullied, and total negative life events past 12 months.

Appendix 3.18A. Binary logistic regression assessing the associations between street-specific variables and self-harm during the past 12 months.

Variable	AOR (95% CI)
Gender	4.20 (0.95-18.66)
Still have contact with family	0.19 (0.04-0.96) *¬
Religious group	0.32 (0.06-1.80)
Primary caretaker's employment status	0.23 (0.04-1.36)
Weekly cigarettes	1.49 (0.12-18.43)
Weekly alcohol use	0.34 (0.05-2.30)
Family structure	1.70 (0.36-7.98)
Sib size	3.27 (0.71-14.98)
In romantic relationship	1.36 (0.24-7.83)
Self-harm prior to the past 12 months	116.75 (14.13-964.73) ***
Parental separation/divorce	3.74 (0.83-16.84)
Conflict with parents	0.50 (0.13-1.95)
Serious accident or illness of family member	0.26 (0.05-1.29)
Death of family member	0.89 (0.20-3.98)
Serious romantic relationship problems	1.31 (0.18-9.84)
Breakup	14.19 (2.60-77.39) **
Difficulty making/keeping friends	0.57 (0.12-2.68)
Serious accident or illness of close friend	1.44 (0.32-6.41)
Friend attempted suicide	4.89 (0.98-24.45)
Physically abused	0.53 (0.11-2.43)
Sexually abused	1.08 (0.23-5.13)
Trouble with police	0.23 (0.04-1.49)
Other negative events during the past 12 months	1.71 (0.29-9.96)

Notes:

- AOR = Adjusted odds ratio
- CI = Confidence interval
- *** p <0.001, ** p <0.01, * p < 0.05
- ¬ = Inverse relationship [negative beta (β) value]

- The model assesses the associations between street-connected adolescents' socio-demographic characteristics and individual negative events during the past 12 months, and self-harm during the past 12 months [$\chi^2_{(df = 23)} = 100.37$, p <0.001. Cox & Snell $R^2 = 0.307$; Nagelkerke $R^2 = 0.635$; Homer & Lemeshow test = 0.054; Cases correctly predicted = 94.5%].

Appendix 3.18B. Negative binomial regression assessing associations between street-specific variables and frequency/counts of self-harm during the past 12 months.

Variable	AIRR (95% CI)
Gender:	
Male	Reference
Female	3.52 (1.30-9.52) *
Still have contact with family:	
No	Reference
Yes	0.37 (0.12-1.11)
Religious group:	
Christian	Reference
Muslim	0.35 (0.12-1.06)
Primary caretaker's employment status:	
Unemployed	Reference
Employed	0.47 (0.17-1.30)
Weekly cigarettes:	
Never/stopped smoking	Reference
≥ 1 cigarette	2.69 (0.55-13.13)
Weekly alcohol use:	
Never drink	Reference
One or more drinks	0.55 (0.17-1.77)
Family structure:	
My father has one wife	Reference
My father has more than one wife	1.21 (0.46-3.15)
Sib size:	
0 – 4 siblings	Reference
> 4 siblings	1.56 (0.61-3.98)
In romantic relationship:	
No	Reference
Yes	1.08 (0.33-3.57)
Self-harm prior to the past 12 months:	
No	Reference
Yes	23.38 (7.81-70.03) ***
Parental separation/divorce:	
No	Reference
Yes	1.44 (0.59-3.47)
Conflict with parents:	
No	Reference
Yes	0.58 (0.23-1.47)
Serious accident or illness of family member:	
No	Reference
Yes	0.51 (0.19-1.36)
Death of family member:	
No	Reference
Yes	0.91 (0.34-2.42)
Serious romantic relationship problems:	
No	Reference
Yes	2.41 (0.68-8.56)

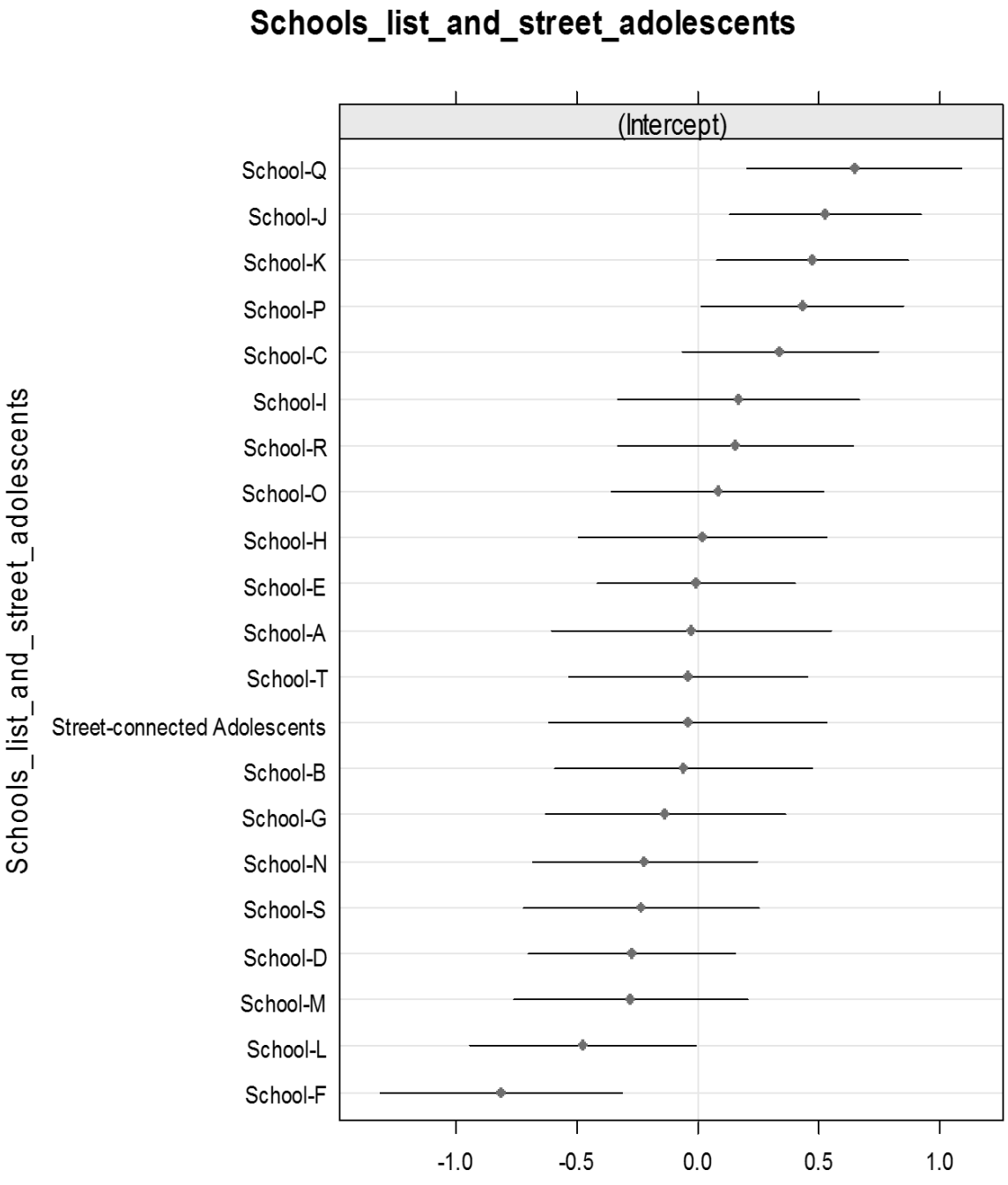
Appendix 3.18B (continued)

Variable	AIRR (95% CI)
Breakup:	
No	Reference
Yes	2.68 (0.98-7.33)
Difficulty making/keeping friends:	
No	Reference
Yes	0.78 (0.27-2.20)
Serious accident or illness of close friend:	
No	Reference
Yes	1.16 (0.46-2.89)
Friend attempted suicide:	
No	Reference
Yes	3.31 (1.21-9.07) *
Physically abused:	
No	Reference
Yes	0.55 (0.21-1.44)
Sexually abused:	
No	Reference
Yes	1.11 (0.35-3.48)
Trouble with police:	
No	Reference
Yes	0.27 (0.07-1.07)
Other negative events during the past 12 months:	
No	Reference
Yes	3.08 (0.89-10.59)

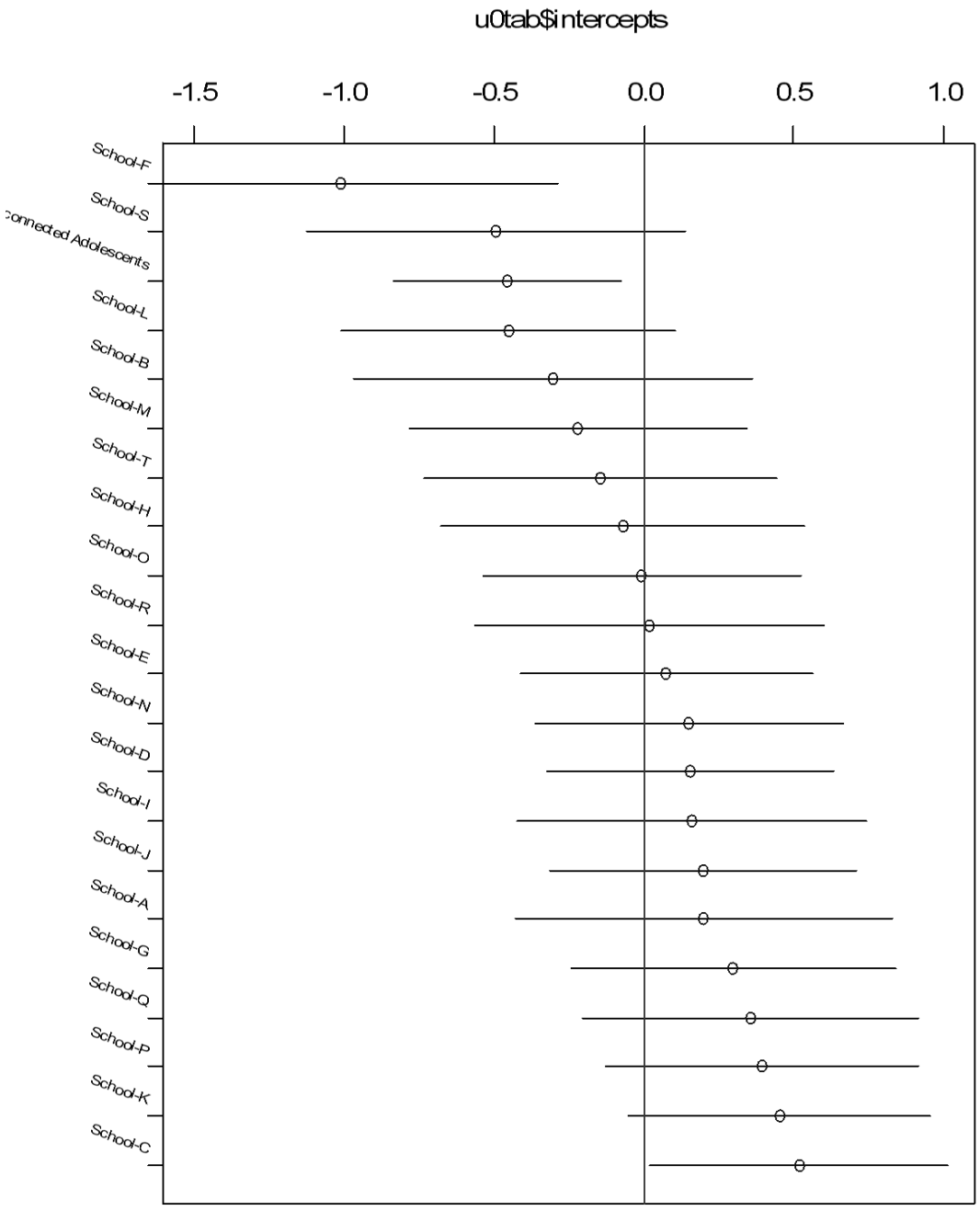
Notes:

- AIRR = Adjusted incidence rate ratio
- CI = Confidence interval
- ******* p <0.001, ****** p <0.01, ***** p < 0.05
- ¬ = Inverse relationship [negative beta (β) value]

Appendix 3.19. Caterpillar plot showing cluster effect with 95% CI resulting from the null multilevel logistic regression model



Appendix 3.20. Caterpillar plot showing cluster effect with 95% CI resulting from the null multilevel negative binomial regression model.



Appendix 4

Appendix 4.1. Participant Information Sheet (key adult stakeholders)

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

UNIVERSITY OF LEEDS

PARTICIPANT INFORMATION SHEET B

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.

University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date: **09-Jan-2017**.

Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

[Version IV: 28-Feb-2017]

Introduction

You are being invited to take part in a research project titled "Self-Harm in Adolescents in Ghana". Before you make a decision whether you want to take part in this research, it is important for you to understand why we are doing the research and what it will involve. Please take a few minutes to read the following information carefully and discuss it with others if you wish. Please feel free to contact me if you have any questions or doubts.

What is the purpose of the research project?

Adolescents are the most vulnerable group to self-harm and suicidal behaviour across the world. However, in Ghana, although media reports show that self-harming and suicidal behaviours are common and frequent in adolescents, there is very little research on self-harm and suicide in adolescents. Therefore, this research seeks to establish an improved understanding about how common self-harm is; risks; protective factors; motivations; and prevention of self-harm among in-school adolescents and street-connected adolescents in Ghana. It is hoped that the findings and recommendations of this study will add to our knowledge and understanding of the problem and inform effective intervention and prevention efforts in Ghana. This research is part of a PhD project at the University of Leeds, UK, and has received ethical approval from the University of Leeds Psychology Ethics Committee, UK and the Ethics Committee of the Humanities, University of Ghana, Legon, Accra, Ghana.

Why have I been chosen?

This research is looking to invite adolescents aged between 13 and 19 years who are in-school or street-connected to participate. A small number of key other people (i.e., heads of

second cycle schools; teachers; street social workers; parents/guardians of adolescents; a representative of the Department of Social Welfare; and heads of charity organisations) who work directly or live with these adolescents are also been invited to take part.

Do I have to take part?

No! Taking part in this study is entirely voluntary. This means it is entirely up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form – a letter that indicates that you agree to take part. Even after you consent and agree to take part, you can still withdraw without giving a reason up to four months after the interviews, by which time it will be impossible to retract information because I will have incorporated your answers into analysis of the answers from a much larger group.

What will I do if I take part?

If you sign and fill the 'Consent Form D' with your contact details, I will contact and invite you for a one-to-one interview to discuss your perspective and views about the phenomenon of self-harm in adolescents in Ghana. You and I will arrange a convenient time and location (quiet and private) that is both comfortable to you and suitable for the interview (preferably your office or school, a nearby clinic, hospital, or charity organization) and meet for the interview. This discussion will last between approximately 45 and 60 minutes.

On the day of the interview, we will go over the participant information sheet and consent form to clarify any questions you might have. Generally, you will have full control of the discussion to talk about your views and, possibly, your experiences with adolescents who self-harm. The questioning style I will be using is semi-structured, meaning I will be using open-ended questions to enable you to recount your views and experiences with as much or as little details as you wish.

What type of information will be sought from me?

The questions to be asked in the interview will be about your views and possible personal experiences with adolescents who self-harm and/or engage in suicidal behaviour. I will ask you to tell me your views about what factors present as risks and protective to self-harm and suicidal behaviour in adolescents in Ghana. I will also ask for your views about how adolescents who harm themselves can be helped, and how self-harm and suicidal behaviour in adolescents can be prevented in Ghana. Again, I will ask you to complete a short background questionnaire so that I have a few pertinent facts about you (e.g., gender, age etc.). However, I will ask you for no information which would identify you (e.g., name of work place, telephone number etc.). You may skip one or more questions you may feel uncomfortable to respond to. There are no right or wrong answers but the more honest you are in your answers, the more accurate will the findings be.

Will I be recorded and how will the recording be used?

I will ask for your permission from the 'Consent Form B' to record the interview through audio-recording. The recording is needed in order to allow the researcher to fully listen to what you are saying and for him to be fully engaged with you during the interview. The recordings will be transcribed (typed up) to allow me to study what you said during the

interview in detail, and then the recordings will be deleted permanently. Again, I will ask your permission in the “Consent Form B” to use anonymised quotations (that is, small sections of what you said) from what you said in reports of the research which I will include in my doctoral thesis, publications, and conference presentations. Your identity will be masked because I will use a different name and I will omit or change details which together might have increased the chances of someone identifying you.

Will my taking part in the research be kept confidential?

All the information that I collect about you during this research will be kept strictly confidential. Only anonymised copies of transcripts will be kept and used for analysis. Signed consent forms will be sealed in an envelope and placed in a locked filing cabinet. Completed background information questionnaires will be kept separately from the transcripts and in a locked filing cabinet so that only the research team (me, my two supervisors, who are both professors in my university) will be able to link real participant identity information with anonymised transcripts for the purposes of the research. Confidentiality will only be breached in cases where you clearly state so. Once the research is complete, the interview recording and transcripts will be destroyed.

I am obliged to let you know that there are limits to confidentiality in research under some very unusual and specific circumstances: if, during the interview, you reveal any intentions of killing yourself or harming or killing others, or tell me about any serious or sufficiently alarming criminal activity that you have been involved in, or reveal any information which leads me to think that you are in danger from others, I will have to alert the appropriate authorities (e.g., the Ghana Police). However, I assure you that this kind of information is not sought in my research and I do not expect that this will be an issue at all.

What are the possible disadvantages or risks of taking part?

You may feel upset answering some questions about self-harm or your experiences with adolescents who self-harm or engage in suicidal behaviour. It is also likely that memories of certain painful feelings may be recalled. However, you have full control on how much detail you give and over the questions you answer. Additionally, an arrangement for the availability of four professional psychologists (two Counsellors and two Clinical Psychologists) has been made: you can let me know if you want to see one of them for help. This service will be accessed free of charge for you.

What are the possible benefits of taking part?

The major benefit of participating in this study is to contribute knowledge towards understanding and helping to reduce self-harm in adolescents in Ghana. The immediate benefit is that, participating in this research will provide you education about self-harm in adolescents in Ghana and grant you relief from certain painful emotions.

When is the deadline for withdrawing?

You can withdraw at any point before, during and after the interview is conducted up four months (following the interview) – when it would be when it would be impossible to have your information removed from the research as by then it will have been merged with the information from other participants for the purpose of analysis.

What will happen to the research results?

The results of this research will go towards the award of a PhD which is projected to be completed in December 2019 and may be included in relevant academic journal publications and reports to relevant authorities in Ghana.

Has the research project received ethical approval?

This research has received ethical approval from the Research Ethics Committee, School of Psychology, University of Leeds, Leeds, UK (Ref. №: 16-0373. Date: 06-Dec-2016) and the Ethics Committee of the Humanities, University of Ghana, Legon, Accra, Ghana (Ref. №: ECH 078/16-17. Date: 18-Jan-2017.). Further, this research has received permission from the Ghana Education Service, Greater Accra Regional Office (Ref. №: GES/GARISS5/358. Date: 09-Jan-2017) and the Department of Social Welfare, Ministry of Gender, Children and Social Protection, National Head Office (Ref. №: A345. Date: 18-Jan-2017).

Who is organising/funding the research?

The Leeds International Research Scholarships (LIRS), University of Leeds, UK, is funding this research.

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	Professor Mitchell Waterman University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Further, if you have any questions about your rights as a research participant in this study you may contact:

The Chair, School of Psychology Ethics Review Committee, University of Leeds, UK, at Ethics.Committee@webhost02h.leeds.ac.uk

OR

The Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

Appendix 4.2. Consent for invitation to interview form

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

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Consent Form D

[Version IV: 28-Feb-2017]

Title of Project: Self-harm in Adolescents in Ghana

Name of Primary Researcher: Emmanuel Nii-Boye Quarshie

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.

University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date**: 09-Jan-2017**.

Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

I confirm that Emmanuel Nii-Boye Quarshie, Doctoral Research student from the University of Leeds, Leeds, UK, may contact me regarding the above research project for a discussion in a one-to-one interview, using the details below:

Name: …….

Telephone Number: ……....

Email (optional)**:** ……

Address (optional)**:** …….....

_____	_____	_____
Name of Participant	Signature	Date
_____	_____	_____
Name of person taking consent	Signature	Date

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	Professor Mitchell Waterman University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Further, if you have any questions about your rights as a research participant in this study you may contact:
The Chair, School of Psychology Ethics Review Committee, University of Leeds, UK, at Ethics.Committee@webhost02h.leeds.ac.uk OR
The Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

Appendix 4.3. Socio-demographic questionnaire to key adult stakeholders

Questionnaire Code: _____
[Version 1: 28-Feb-2017]

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University of Leeds
Leeds LS2 9JT, UK.
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

Overview

This short background questionnaire asks about relevant non-identifying facts about you. At the end, the information you give will be used to better interpret the opinions you share in the one-to-one interview with the researcher. DO NOT write your name anywhere on this questionnaire. Read every question. The answers you give will be kept private. Please answer the questions honestly based on what you really know or do. Thank you.

15) What is your gender?

Male	Female
1	2

16) What is your age? (*please specify*) _____ years.

17) What is your highest educational level?

No formal education	Primary school	JSS / JHS	SSS/SHS/Technical/ Vocational school	Tertiary	Other
1	2	3	4	5	6

18) What is your highest qualification (E.g., BECE; 'O'/'A' Levels; SSSCE/WASSCE; Certificate; Diploma; HND; 1st Degree; Master's; PhD etc.) (Please specify) _____

19) What is your religious group?

Christian	Muslim	African Traditional Religion	Other
1	2	3	4

20) What is your employment status?

Unemployed	Employed	Self-employed	Retired	Other
1	2	3	4	5

21) If you are presently employed, what is your position/rank at work (e.g, Director; Head/Asst head of institution; Supervisor; Foreman; CEO; Proprietor; Teacher; Senior House Master/Mistress; School counsellor etc.)? (*Please specify*) _____

22) How many years have you been in this position? _____ year(s).

23) What is your marital status?

Single	Married	Divorced/Separated	Widowed	Other
1	2	3	4	5

24) How many children do you have?

I have no child	I have 1 child	I have 2 children	I have 3 children	I have 4 children	I have 5 children	I have more than 5 children
1	2	3	4	5	6	7

25) How many of your children are aged between 13 and 25 years?

None	One	Two	Three	Four	Five	More than five
1	2	3	4	5	6	7

Appendix 4.4. Interview protocol - Adolescents

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
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Protocol for Interview with Adolescents.

[Version II: 28-Feb-2017]

Domain	Main Question	Probing Questions		
		Antecedents:	**Behavioural Characteristics:**	**Consequences:**
Experience of self-harm	Please tell me more about your self-harm.	Now, I want to ask you a few questions about things that happened before you harmed yourself: a) How old were you when you started harming yourself? b) When was the last time you intentionally harmed yourself? c) Could you share with me what you remember happened that led you to think about or actually harming yourself? - What was going on for you at home/where you live? - At school / workplace? - Friendship? - Loss / Grief? - In other areas of your life? d) What made you choose self-harm and not another behaviour? e) Did you seek help (Who did you share these problems with for help)? f) How did you learn to harm yourself (*e.g., through a friend, relative or from media/social media etc*. *Do you know someone who had harmed himself or herself*)? g) What did you expect to happen if you harm yourself? - Did you wish to prevent something bad from happening to you? - Did you wish to die?	At this point, I am going to ask you about what you did and how you harmed yourself: a) In what ways did you harm yourself? (*e.g., self-injury* or *self-poisoning*). b) What substance or object did you use to harm yourself? c) How did you happen to choose this method to harm yourself? d) How often did you harm yourself (*in a year, month, week, & day*)? e) Where on your body did you harm yourself? (NB: *probe self-poisoning as well*) f) How long did it take to harm yourself? (e.g., 5-10mins; 30-60mins etc.) g) How intense or serious were the harms/injuries (*or poisoning*)? h) Did you harm yourself by yourself alone or with others? i) Where did you harm yourself (*i.e., the physical location. E.g., your room etc*)?	OK. Now, I want to know what happened after you had harmed yourself: a) In what ways has harming yourself helped you? b) Has harming yourself made your situation worse? c) Could you tell me what you felt after harming yourself? d) Who did you tell about intentionally harming yourself? e) How did you feel talking about harming yourself to this person? f) How did you treat the harm/injury/poisoning (*e.g., went to hospital/clinic or self-medication*)? g) So, how did harming yourself affect your relationship with your: - Parents? - Friends? - Teachers? - Social worker? - Other (*please specify*)? h) What is the likelihood that you will harm yourself again in the future?

Appendix 4.4: (continued)

Prevention and management of self-harm in adolescents in Ghana.	a) Now, from your experience, what do you suggest should be done to **help** young people like yourself once they have harmed themselves? b) Again, from your experience, what do you think should be done to **prevent** young people like yourself from harming themselves altogether?	In your view, what roles can the following play in the management and prevention process: - Young people themselves? - Families? - Peers / friends? - Schools - Organizations (e.g., Health institutions, NGOs etc.)? - Religious groups and leaders? - Community/opinion leaders? - The government?

Concluding Questions:

- How do you feel participating in this interview?
- What do you think should have been done to make this interview better?
- Finally, do you have any questions for me regarding this interview or research?

Thank you

Appendix 4.5. Interview protocol – School staff and charity facility staff

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

Protocol for interview with:

School Heads, School Counsellors, Teachers, Street Social Workers, Heads of Charity Organization, and Parents / Guardians

[Version II: 28-Feb-2017]

Domain	Main Questions	Probing Questions
Nature and Prevalence of self-harm in adolescents	i. What is your general opinion about self-harm in adolescents in Ghana? ii. How prevalent is self-harm among adolescents in Ghana today? iii. Who are the adolescents who harm themselves?	- Gender differences & similarities on causes, characteristics and incidence?
Reasons & Effects of the act	i. Can you share with me your (direct or indirect) experience of an encounter with an adolescent who had self-harmed? ii. What are some of the factors that make adolescents harm themselves? iii. What do you think would make an adolescent choose self-harm and not another behaviour? iv. In your opinion, how do adolescents (students) learn to self-harm (from where do they learn how to self-harm)?	- Psychological factors? - Interpersonal? - Family? - Environmental? - School? v. Religious …etc. ***Probe***: what adolescents who self-harm want to achieve with the act?; What ways does self-harm affect the adolescent?
Attitudes & handling of adolescents who self-harm	i. How are adolescents who self-harm viewed/perceived in Ghana? ii. How are adolescents who self-harm handled (by teachers) in schools in Ghana? iii. What are some of the key challenges you face in helping students who self-harm?	- To what extent do you (e.g., teachers in this school) feel inadequate in offering help to adolescents (students) who present with self-harming behaviours/tendencies?
Prevention of self-harm in adolescents in Ghana.	This last bit is about the management and prevention of self-harm in adolescents in Ghana: – What is your opinion on the help-seeking behaviour of adolescents experiencing emotional/mental health challenges in (our schools in) Ghana? – In your opinion, what are some of the ways in which **adolescents who self-harm can be helped**? – What resources are available to you (in your school) to help you provide the needed help to adolescents who self-harm? – What are your suggestions as to how self-harm in adolescents can be **prevented** in Ghana (especially, in our schools)?	In your view, what roles can the following play in the prevention process – – Young people themselves? – Families? – Peers / friends? – Schools – Organizations (e.g., Health institutions, NGOs etc.)? – Religious groups and leaders? – Community/opinion leaders? – The government / GES?

Appendix 4.6. Interview Protocol – Government representative 1

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

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Protocol for interview with Representative from the Department of Social Welfare
[Version II: 28-Feb-2017]

Domain	Main Question	Probing Questions
Nature and Prevalence of self-harm in adolescents	What is your general opinion about self-harm in adolescents in Ghana? How prevalent is self-harm among street-connected children and adolescents in Ghana today? Who are these adolescents who harm themselves (their known characteristics)?	Gender differences & similarities on causes, characteristics and incidence?
Policies	What are some of the child protection policies that deal directly with the mental health of street-connected children and adolescents in Ghana? How are these policies implemented and to what extent?	
Resources	What resources are available for child protection activities in Ghana?	Accessibility? Where & How? By who & when?
Prevention of self-harm in adolescents in Ghana.	How does the DSW help with the prevention of self-harm in children and adolescents in Ghana?	

Thank you.

Appendix 4.7. Interview Protocol – Government representative 2

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

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Protocol for interview with Representative from the Ghana Education Service
[Version II: 28-Feb-2017]

Domain	Main Question	Probing Questions
Nature and Prevalence of self-harm in adolescents	i. What is your general opinion about self-harm in adolescents? ii. How prevalent is self-harm among adolescents in schools in Ghana today? iii. Who are the adolescents who harm themselves (their known characteristics)?	- Gender differences & similarities on causes, characteristics and incidence?
Policies	i. What are some of the child protection policies that deal directly with the mental health of children and adolescents in Ghanaian schools? ii. How are these policies implemented and to what extent?	
Resources	i. What resources are available for child protection activities in Ghanaian schools? (Anything in the school curricular regarding self-harm and suicide prevention specifically, or mental health, more generally?)	- Accessibility? - Where & How? - By who & when?
Prevention of self-harm in adolescents in Ghana.	How does the GES help with the prevention of self-harm in children and adolescents in schools in Ghana?	

Thank you.

Appendix 4.8. Consent form to adults stakeholders

School of Psychology
Faculty of Medicine and Health
University of Leeds
Leeds LS2 9JT, UK
www.medhealth.leeds.ac.uk/info/1300/school_of_psychology

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Consent Form – B

Ethical approval references:

University of Leeds, Leeds, UK – Ref. №: **16-0373**. Date: **06-Dec-2016**.

University of Ghana, Legon, Ghana – Ref. №: **ECH078/16-17**. Date: **18-Jan-2017**.

Permission references:

Ghana Education Service, GAR Office – Ref. №: **GES/GARISS5/358**. Date: **09-Jan-2017**.

Department of Social Welfare, National Head Office – Ref. №: **A345**. Date: **18-Jan-2017**.

[Version IV: 28-Feb-2017]

Consent to take part in 'Self-harm in Adolescents in Ghana' research

Add your initials next to the statement if you agree

1	I confirm that I have read and understood the information sheet dated February 27, 2017 explaining the above research project and I have had the opportunity to ask questions about the research.	
2	I understand that my participation in this research is voluntary and that I am free to withdraw at any time without giving a reason up to four months following the interview without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline. Please let me know about your decision to withdraw. Primary Researcher: Emmanuel Nii-Boye Quarshie Tel: 00447778085224 [UK]; 00233240446684 [Ghana] E-mail: psenbq@leeds.ac.uk; enquarshie@gmail.com	
3	I agree to the interview being audio-recorded only	
4	I understand that there are no significant risks involved in this research. However, if memories of certain painful feelings evoked during the research make me experience any significant discomfort or emotional breakdown, the researcher has provided for me to see a professional psychologist free of charge.	

[Appendix 4.8 (continued)]

5	I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research. I understand that my responses will be kept strictly confidential unless I agree that it be made public.	
6	I agree for the data collected from me to be stored and used in relevant future research in an anonymised form.	
7	I understand that other genuine researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.	
8	I understand that other genuine researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	
9	I agree to take part in the above research project and will inform the lead researcher should my contact details change.	

Name of participant	
Participant's signature	
Date	
Name of lead researcher	
Signature	
Date*	

Contacts for further information:

Primary Researcher:	Primary Academic Supervisor:
Emmanuel Nii-Boye Quarshie University of Leeds, School of Psychology, Leeds LS2 9JT, UK. Tel: +447778085224 [UK]; +233240446684 [Ghana] Email: psenbq@leeds.ac.uk; enquarshie@gmail.com	**Professor Mitchell Waterman** University of Leeds, Leeds LS2 9NL Tel: +44 (0) 113 343 4219 Email: M.G.Waterman@leeds.ac.uk

Further, if you have any questions about your rights as a research participant in this study you may contact:

The Chair, School of Psychology Ethics Review Committee, University of Leeds, UK, at

Ethics.Committee@webhost02h.leeds.ac.uk

OR

The Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

*To be signed and dated in the presence of the participant.

Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the letter/ pre-written script/ information sheet and any other written information provided to the participants. A copy of the signed and dated consent form should be kept with the project's main documents which must be kept in a secure location.

Appendix 4.9. 15-Point Checklist of Criteria Thematic Analysis (Braun & Clarke, 2006, p. 96)

Process	№	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'.
Coding	2	Each data item has been given equal attention in the coding process.
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated.
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analysed – interpreted, made sense of – rather than just paraphrased or described.
	8	Analysis and data match each other – the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organized story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written Report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done – i.e., described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as active in the research process; themes do not just 'emerge'.