The use of a peer-led intervention in prison to modify the behavioural risk-factors for non-communicable diseases: a feasibility study

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Abstract

Background: Recent research has highlighted that the key modifiable behavioural risk-factors for non-communicable diseases (NCDs) are highly prevalent among prisoner populations internationally, including the United Kingdom (UK) prisoner population. Given the wealth of evidence demonstrating that prison-based peer-led interventions can be effective in modifying health knowledge, attitudes and behaviours among prisoners, it is possible that a peer-led intervention may be used to help modify the highly prevalent NCD risk-behaviours among UK prisoners. However, there is a distinct lack of evidence in the form of well-constructed randomised controlled trials to support such an assertion. Moreover, there is uncertainty as to whether or not a randomised controlled trial would even be possible. This research aimed to address this gap in the literature through conducting a feasibility study to establish if a large-scale definitive study to explore the effectiveness of a peer-led intervention to modify the behavioural risk-factors for NCDs among prisoners is possible.

Methods: This research took place in two prisons in the North of England and utilised a mixed methods exploratory sequential design consisting of two phases; a phase one qualitative exploratory study and a phase two randomised controlled trial feasibility study. The first phase involved 3 focus groups with prisoners and 12 one-to-one interviews with members of staff to gather evidence to inform the development of an appropriate peer-led intervention to modify the behavioural risk-factors for NCDs among prisoners. The phase two quantitative randomised controlled feasibility study utilised a 1:1 randomised controlled design. Eighty participants were recruited in total; 40 were randomised to receive the peer-led intervention and 40 were randomised to the control group. Following delivery of the six-week peer-led intervention to the intervention arm, all participants were followed-up over a three-month period (immediately post-intervention, one-month post-intervention and three-months post-intervention) and asked to complete data collection measures.

Results: Thematic analysis of the phase one qualitative data generated eight overarching themes; non-conducive prison environment, scepticism, positive views towards prison peer-led interventions, peer-led interventions in prison –

the downfalls, success dependent on peer, managing risks, prison regime impact, and increasing staff buy-in. Discussion of specific intervention design aspects revealed important aspects relating to format, length of delivery, content and training of peer-workers, all of which were considered carefully in the design of the peer-led intervention. The qualitative findings were used to develop a six-week peer-led group intervention to be delivered during the phase two feasibility study.

For phase two, the recruitment target of 80 participants was achieved within approximately two months. Average attendance to the peer-led intervention was 61%. Intervention fidelity was overall quite good, however there were some issues with delivery of components which required participants to reflect on behaviour diaries. The majority of the intervention arm participants appeared to find the peer-led intervention, including its group format and delivery through prisoner peers, acceptable. However, some areas for intervention improvement were identified. There did appear to be a small degree of contamination to the control group. Retention rates were high over the first two follow-up periods (86.25%), but did decline by the final follow-up time-point (66.25%). The completion of individual data collection measures by those engaging in the trial were high over all of the trial time-points, however there were some difficulties in the completion of the objective measures, particularly over the latter follow-up periods.

Conclusion: This feasibility study confirms that it is possible to undertake a definitive trial exploring the effectiveness of a prison-based peer-led intervention in modifying the behavioural risk-factors for NCDs among prisoners. However, based on the findings of this study, it is recommended that slight alterations to the study procedures and the peer-led intervention should be undertaken before commencing with a definitive trial. Additionally, changes to the prison environment to better aid prisoners in modifying their NCD risk-behaviours are warranted.

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List of abbreviations

ASH	Action on Smoking and Health
BAME	Black, Asian and Minority Ethnic
BBV	Blood-Borne Virus
BCT	Behavioural Change Technique
BCW	Behaviour Change Wheel
BMI	Body Mass Index
CACE	Complier Average Causal Effect
CI	Confidence Interval
CO	Carbon Monoxide
CONSORT	Consolidated Standards of Reporting Trials
DVD	Digital Versatile Disc
HDC	Home Detention Curfew
HIV	Human Immunodeficiency Virus
HM	Her Majesty
HMIP	Her Majesty's Inspectorate of Prisons
HMPPS	Her Majesty's Prisons and Probation Service
HMPS	Her Majesty's Prison Service
IEP	Incentives and Earned Privileges
IQR	Inter-Quartile Range
IRAS	Integrated Research Application System
ITT	Intention to Treat
MRC	Medical Research Council

NCD	Non-Communicable Disease
NCSCT	National Centre for Smoking Cessation and Training
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NIHR	National Institute for Health Research
NOMS	National Offender Management Service
NRC	National Research Committee
ONS	Office for National Statistics
OR	Odds Ratio
PPI	Patient and Public Involvement
PPM	Parts Per Million
R&D	Research and Development
REC	Research Ethics Committee
SD	Standard Deviation
TDF	Theoretical Domains Framework
UK	United Kingdom
USA	United States of America
VIF	Variance Inflation Factor
WEMWBS	Warwick-Edinburgh Mental Wellbeing Scale
WHO	World Health Organisation
YOI	Young Offender Institute

Chapter 1 Introduction

This PhD thesis is a report of a programme of Doctoral study exploring the feasibility of undertaking a full-scale definitive randomised controlled trial to examine the effectiveness of a peer-led intervention to modify NCD risk-behaviours among prisoner populations. This Introduction Chapter sets the context for the PhD thesis. It begins with a personal account outlining the motivation for this research, before detailing how the remainder of the thesis is structured.

1.1 Background to the thesis

My interest in prisoner health stems from my previous experience of working as a member of a research team based within a cluster of prisons in an area of the UK, dedicated to exploring the mental and physical health of prisoners. The ultimate aim of this prison health research team is to ensure that health services provided to prisoners are based upon a sound evidence base, and are as equitable as possible to services provided to those in community settings. I have worked as part of this team since 2012, with the majority of my previous research primarily focussed on the area of substance misuse.

However, more recently, I worked on a project dedicated to exploring the prevalence of NCDs and their behavioural risk-factors among prisoners, and it was from here that my PhD journey began. During this prevalence study, which was prompted by a lack of research exploring the prevalence of NCDs among prisoners in the UK, along with the findings of previous studies highlighting the high prevalence of behavioural risk-factors for NCDs among prisoners globally (Herbert et al., 2012; Ritter et al., 2011), it was clear that the behavioural risk-factors for NCDs were indeed very high among prisoners in English prisons. For instance, of the 199 male prisoners surveyed, 82% were smokers, just under half (41%) were not meeting physical activity recommendations of partaking in 150 minutes or more of physical activity per week, 41% were adding salt to their food on a daily basis, and just over half (55%) were not consuming vegetables on a daily basis (Hearty et al., 2018). Moreover, when undertaking the prevalence

surveys with the prisoner participants, many anecdotally reported to me that they wanted to do something to address their smoking, diet and physical activity behaviour while in custody, but felt that there was a lack of support to help them do this.

This leads to the question as to what type of support could be introduced into the prison environment to help prisoners modify their NCD risk-behaviours? As will be argued in the following Literature Review Chapter, peer-led interventions may be one way of addressing these behaviours, as there is a growing body of evidence demonstrating that peer-led initiatives have been effective in modifying the health related knowledge, attitudes and behaviours of prisoners. However, much of this research has been restricted to focussing on Human Immunodeficiency Virus (HIV)/Blood-Borne Virus (BBV) prevention, neglecting to explore the impact of peer-led schemes on prisoners NCD risk-behaviours. Thus it is currently unclear whether or not peer-led schemes may be effective in reducing the highly prevalent NCD risk-behaviours of prisoners. Moreover, there is uncertainty as to whether or not a definitive experimental trial exploring the effectiveness of a peer-led intervention in modifying prisoners NCD risk-behaviours would even be possible. It is this latter point that this current PhD research aimed to address through conducting a two-phase feasibility study. The remainder of this thesis is dedicated to presenting to the reader the process of the feasibility study from beginning to end.

1.2 Structure of the thesis

This thesis comprises nine chapters, the first of which is this ‘Introduction’ Chapter (Chapter 1). The following ‘Literature Review’ Chapter (Chapter 2) further sets the context for this PhD study through a critical review of the literature. The chapter concludes by presenting the overarching aims and objectives of this PhD thesis.

Chapter 3 (‘Methodology’) presents the methodological approach that was taken to meet the aims and objectives of this PhD study. Within this chapter, different methodological approaches that may have been adopted are discussed, justifying why a two-phase mixed methods exploratory sequential research

design was ultimately chosen. The specific qualitative and quantitative designs used within this mixed methods approach are also presented and justified.

Chapters 4 ('Phase One Methods') and 5 ('Phase One Results') respectively present the methods and results of the phase one qualitative study, which involved undertaking qualitative focus groups with prisoners and one-to-one interviews with members of prison and healthcare staff. The primary aim of this phase of the research was to explore the perceptions of prisoners and staff about the context of the NCD risk-behaviours in the prison environment, and their views towards a peer-led intervention to modify NCD risk-behaviours among prisoners, so that an appropriate peer-led intervention could be developed.

Chapter 6 ('Intervention Development and Recruitment, Selection and Training of Peer-Workers') presents how the findings of the phase one study were used in the design of the peer-led intervention to be delivered during phase two of the research. It also details how the peer-workers that delivered the peer-led intervention during phase two were recruited, selected and trained to deliver the intervention.

Chapters 7 ('Phase Two Methods') and 8 ('Phase Two Results') respectively present the methods and results of the phase two quantitative study, which was primarily concerned with exploring very specific feasibility objectives to establish whether or not a large scale definitive trial to explore the effectiveness of a peer-led intervention to modify NCD risk-behaviours among prisoners would be possible.

The final Chapter of this thesis, the 'Discussion' Chapter (Chapter 9), interprets the findings from both phases of the research, ultimately highlighting whether or not a definitive trial exploring the effectiveness of a peer-led intervention in modifying the NCD risk-behaviours of prisoners can be, and should be, proceeded with. The strengths and limitations of the overall PhD study, along with recommendations for practice, policy and future research, are also presented.

Chapter 2 Literature Review

2.1 Introduction

This chapter aims to provide the context for this project through a critical review of the literature. The chapter is not a systematic review of the literature pertaining to the prevalence of behavioural risk-factors for NCDs among prisoners, nor of the literature exploring peer-led health initiatives in prisons, as such thorough and rigorous reviews have already been undertaken in recent years (see Herbert et al., 2012; Ritter et al., 2011; South et al., 2014). Instead, this chapter presents the context and rationale for this PhD study through a critical review of the key literature exploring the prevalence of NCD risk-behaviours among prisoners in the UK, and the potential role that peer-led initiatives may have in modifying these risk-behaviours.

The chapter begins by reviewing the global burden of NCDs and their risk-behaviours, with particular attention drawn to the inequalities faced by those from marginalised and vulnerable groups; here, research exploring the prevalence of the behavioural risk-factors for NCDs among prisoners in the UK is critically reviewed. The chapter then critically discusses the potential to modify the NCD risk-behaviours of prisoners through utilisation of peer-led initiatives, and the theory underpinning these types of schemes. The chapter then reviews the different typologies of peer-led health schemes that have been explored within the broader research literature, with the remainder of the chapter focussing on the findings of research studies undertaken exploring the implementation and impact of existing peer-led health schemes on the recipients of the intervention and the wider prison environment. The chapter concludes by providing a summary of the overall literature review, identifying the key gaps in the existing literature, and confirming the aims for this study.

2.2 The global burden of NCDs

Recent decades have witnessed a shift in the global burden of disease from communicable, infectious diseases to NCDs (Murray et al., 2012). The four primary NCDs as identified by the World Health Organisation (WHO) consist of cardiovascular diseases, diabetes, cancers and chronic respiratory diseases (WHO, 2011; 2013). NCDs are the leading cause of death worldwide, and have become a major public health issue for many countries, with 38 million of the world's 56 million deaths in 2012 attributed to such diseases (WHO, 2014a). Moreover, approximately 89% of the 557,000 deaths in the UK in 2012 were accounted for by NCDs (WHO, 2014b). Not only do these diseases have devastating consequences on mortality, but they are also of huge financial burden to the health services responsible for caring for patients suffering from these conditions. For instance, respiratory diseases alone are thought to cost the National Health Service (NHS) approximately £10 billion annually (British Lung Foundation, 2017). While it is acknowledged that NCDs affect people from all backgrounds, there are clear inequalities in the burden of NCDs, with those from more deprived and disadvantaged backgrounds faring far worse than people from more affluent backgrounds (Herbert et al., 2012; Plugge et al., 2014; Sommer et al., 2015). For example, there are disproportionately higher rates of NCDs among individuals of lower socio-economic status (Sommer et al., 2015), and much higher levels of premature mortality from chronic disease among those from the most deprived areas (Department of Health, 2013).

The development of NCDs can be largely prevented however, through modifying the key behavioural risk-factors linked to the development of these diseases, namely the smoking of tobacco, physical inactivity and poor diet (WHO, 2011). The reduction of these risk-behaviours form part of the WHO's global action plan to reduce the burden of NCDs across the globe (WHO, 2014a), and have become priority areas for action for the UK Government (HM Government, 2010; Department of Health, 2013). However, as with the prevalence of NCDs, evidence suggests that the prevalence of NCD risk-behaviours are higher among those from more vulnerable and marginalised backgrounds in the UK. For example, analysis of the Health Survey for England data from 2003 and 2008 revealed that although the numbers of individuals engaging in multiple NCD risk-

behaviours had fallen overall during this period, this was most prominent in groups of higher socio-economic status, with those less educated and in less skilled forms of employment still likely to be engaging in multiple NCD risk-behaviours (Buck and Frosini, 2012). In light of the health inequalities faced by those from vulnerable backgrounds, the Secretary of State for Health in 2013 placed increased emphasis on the need to address the prevalence of NCD risk-behaviours among the most deprived and vulnerable populations (Department of Health, 2013).

2.3 Prevalence of the behavioural risk-factors for NCDs among UK prisoners

Given that prisoners in the UK come from some of the poorest and socially excluded sections of society (Herbert et al., 2012; Plugge et al., 2014), they are at a greater risk of engaging in NCD risk-behaviours and suffering from their related chronic conditions. Research conducted into the prevalence of NCD risk-behaviours among prisoner populations has indeed evidenced that the rate of NCD risk-behaviours among prisoners in the UK is alarmingly high (Edwards et al., 2001; Eves and Gesch, 2003; Edwards et al., 2007a; Singleton et al., 2003; Plugge et al., 2009).

2.3.1 Smoking

Data gathered from prisoners in England and Wales since 1994 have consistently shown smoking prevalence rates to be at a high level, in excess of 80% on average; ranging from 78% to 85% in the male population (Bridgwood and Malbon, 1995; Singleton et al., 2003; Lester et al., 2003; Heidari et al., 2007), and from 81% to 85% in the female population (Singleton et al., 2003; Plugge et al., 2009). It is evident from these statistics that smoking behaviour is markedly increased among prisoner populations compared to the general population, as during the period in which the aforementioned studies were conducted, average smoking prevalence rates for males and females in the general population were 27% and 25% respectively (Office for National Statistics (ONS), 2014). Such findings would suggest that prisoners are up to three times more likely to engage in smoking behaviour than their counterparts in the community. Similar high

smoking levels were observed in a previous study undertaken by the researcher in which the prevalence rates of NCDs and their risk-behaviours were explored amongst a random 10% sample of prisoners at the two prisons the setting of this PhD research (Prisons A and B). This research revealed that 84% of prisoners at Prison A and 78% of prisoners at Prison B were engaging in smoking behaviour (Hearty et al., 2018).

2.3.2 Physical activity

Prisoners in England in Wales are provided with opportunities to undertake physical exercise while in custody, such as when permitted to use the outside exercise yard, or when given access to use the prison gymnasium. Prior to the introduction of the most current physical activity guidelines, recommending that adults undertake 150 minutes of moderate physical activity per week to maintain good health, research indicated that physical activity levels among prisoners were better than that of the general population in some respects, but lacking in others. In their self-report study exploring the physical health of male sentenced prisoners, Bridgwood and Malbon (1995) found that prisoners were more likely than their general population counterparts to have engaged in vigorous physical activity in the preceding four weeks (67% versus 45% respectively), but less likely than the general population to have participated in moderate walking (15% versus 38% respectively). Just over half of the prisoners sampled reported to not engaging in any walks of one mile or more in the previous four weeks, compared to only 35% of the general population. It is feasible that these differences reported by Bridgwood and Malbon (1995) in the types of physical activity undertaken by prisoners and the general population may be related to circumstance, with the prison environment constraining prisoners' ability to undertake walking based forms of physical activity, but on the other hand providing them with gymnasium facilities to engage in more vigorous types of activity, with such facilities arguably less accessible to males in the general population. Later studies undertaken by Condon et al. (2008) and Fischer et al. (2012) indeed appear to support such an assertion. For instance, Condon et al. (2008) found that many prisoners reported that the prison provided them with excellent gymnasium facilities to undertake physical activity. In contrast, Fischer et al. (2012) reported that although drug using prisoners' walking activities were very high in the community, this

dramatically reduced upon entry into prison (4.67 miles per day versus 1.8 miles per day respectively), suggesting that the prison environment inhibits walking forms of activity.

A much more recent study by Hearty et al. (2018) found the physical activity levels of male prisoners to be mixed, with some meeting the recommended guidelines of engaging in 150 minutes or more of physical activity per week, and others not. For instance, of the 199 male prisoners surveyed from two prison institutions in England, just over half (59%) reported to engaging in 150 minutes or more of physical activity per week, while 41% reported to not meeting these recommendations. These results are broadly similar to self-reported levels of physical activity among males in the general population however, where a recent Health Survey for England found that 67% of males reported to meeting recommended guidelines of physical activity per week (Scholes and Mindell, 2013). These results of Hearty et al. (2018) do compare favourably to physical activity levels reported by female prisoners, where the proportions reporting to meeting national recommended levels of physical activity appear to be much lower than for males (Plugge et al., 2006). In the study by Plugge et al. (2006), only 11% of the 199 female respondents providing data regarding their physical activity levels while in custody self-reported to meeting the national recommended physical activity guideline of the time. This is lower than the percentage of females in the general population reporting to meet the recommended guideline, which at that time was 25% (Department of Health, 2005).

The proportion of prisoners not meeting national recommendations for physical activity are concerning given that physical inactivity is thought to contribute to one in six deaths in the UK (Public Health England, 2014a), suggesting that encouragement of physical activity while prisoners are detained in custody should be a priority area for action. However, encouragement of physical activity uptake may be negated by restrictions to activity posed by the prison environment. For example, Her Majesty's Inspectorate for Prisons (HMIP) annual reports since 2007 to 2016 have reported trends of prisoners spending less and less time out of their cells, with fewer opportunities for prisoners to attend the prison

gymnasium, and less frequent opportunities for prisoners to access the prison exercise yard to engage in activity (HMIP, 2009; 2010; 2012; 2014; 2015; 2016a).

2.3.3 Diet

Three studies have explored in-depth the diet of prisoners in England and Wales (Edwards et al., 2001; Eves and Gesch, 2003; Edwards et al., 2007a). Taken together, these studies contain samples generally representative of the wider prison population, including adult and young offender facilities, male and female establishments, and establishments of different category (A, B and C). The only type of establishment not represented by these studies are Category D prisons, which is unsurprising given the open nature of such facilities; with such open conditions negating attempts to accurately measure the diet of prisoners due to opportunities to consume food when temporarily released from prison. All three of these studies calculated the mean nutrient intake values of the different meals provided to prisoners, comparing these with nationally recommended intake references published at the time.

Across all three of the studies, salt intake exceeded recommendations, being up to two to three times more than the recommended 1600mg per day. This is even more alarming given that none of the studies factored addition of salt to food upon serving when calculating salt content. It must be acknowledged that a similar trend has been observed outside of prison however, with the dietary habits of the general population revealing them too to be exceeding salt recommendations (Allender et al., 2006). Although the earlier studies conducted by Edwards et al. (2001) and Eves and Gesch (2003) found the diets of male prisoners and young offenders to be exceeding the total percentage energy intake from fat, the most recent study by Edwards et al. (2007a) reported contradictory findings, with in most cases the mean daily energy intake from fat being in line with current recommendations, except from a small number of the diets provided to female prisoners, which were in excess of recommendations. In the later study by Edwards et al. (2007a), across each different type of prison (male, female, young offender), the mean percentage energy intake from most of the meals provided were in excess of recommendations, particularly among the female prisoners, where in some cases the meals served to female prisoners provided over 1000 kcal more than the recommended allowances. These statistics compare less

favourably than those obtained from a sample representative of the wider UK population, where the 2008-09 National Diet and Nutrition Survey found median energy intakes to be marginally lower than recommended intake references among both male and female adults aged between 19 and 64 (Whitton et al., 2011). However, the findings of Whitton et al. (2011) were based on participants' self-reported dietary behaviour, and thus it is possible that they may have under reported their nutritional intake.

With regards to fruit and vegetable intake, self-report studies exploring prisoner diets have frequently reported that prisoners do not meet the recommended intake of five or more portions of fruit and vegetables per day (Lester et al., 2003; Plugge et al., 2006). However, this lack of fruit and vegetable intake may not necessarily be a result of the choice of prisoners, but rather imposed upon them by the lack of provision of these types of foods. For instance, Edwards et al. (2007a) in their observation of prisoner diets concluded that prisoners were not provided with enough fruit and vegetable portions on a daily basis to meet the recommended guidelines. Such appears to be corroborated by prisoner feedback of the prison diet, with HMIP acknowledging the numerous complaints put forth by prisoners in relation to the food with which they are provided, with frequent reference made to lack of fruit and vegetable provision, lack of variety, and provision of an unbalanced and unhealthy diet dominated by fat and carbohydrates (HMIP, 2016b).

2.3.4 Summary

It is evident from research exploring the levels of smoking, dietary habits and physical activity levels of prisoners in the UK, that the prevalence of the behavioural risk-factors for NCDs are high among this vulnerable population. This is particularly true for smoking, where approximately three-quarters of the population report to engaging in this behaviour. With regards to prisoner diet, the mean energy intake from meals has been found to exceed recommendations, as has salt intake. Additionally, most prisoners report not meeting the recommended guideline of consuming five portions of fruit and vegetables per day, and thus there is scope to address each of these nutritional risk-behaviours. Although the physical activity levels of male prisoners appear to be much better than for females, there are still large proportions of each not meeting the recommended

levels to promote good health, and thus again there is scope to address this NCD risk-behaviour with prisoner populations.

It must be acknowledged that the prevalence research studies discussed above were not without their limitations, particularly those exploring the smoking and physical activity levels of prisoners. Almost all of the studies discussed exploring the smoking and physical activity levels of prisoners relied on self-reported data provided by prisoners, with no objective measures collected to verify this data, such as carbon monoxide (CO) levels in breath to verify smoking, or accelerometers to verify reported activity. Given the lack of objective verification measures, the results of these studies are open to reporting biases, as the prisoners may have over- or under-reported their smoking and physical activity, leading the researchers to draw inaccurate conclusions regarding the prevalence of these behaviours among the UK prisoner population. However, as posited by Plugge et al. (2009), there is no clear evidence to suggest that prisoner populations are less reliable informants than individuals within the general population, with smoking and activity levels among the general population frequently collected via such self-report measures. Moreover, the fact that the studies exploring prisoner smoking levels have led to repeated and consistent prevalence rates, this strengthens the confidence that the rates obtained via the self-report methods used have been robust in capturing the true prevalence rates of smoking among prisoners.

In light of the high prevalence rates of NCD risk-behaviours among UK prisoners, and their potential impact on prisoner morbidity and mortality, reducing these risk-behaviours should be a priority area of action for the prison health services responsible for providing healthcare to prisoners during their stay in custody. Indeed, in their most recent guidelines pertaining to optimising the physical health of prisoners in custody, the National Institute for Health and Care Excellence (NICE) advises health services to take appropriate action to promote and support prisoners in the areas of smoking cessation, healthy diet and healthy levels of physical exercise (NICE, 2016). However, increasing the promotion and interventions available to support prisoners to live healthier lifestyles will not alone lead to reductions in risk-behaviours, as such would require co-operation and desire of the prisoners to engage with such services to effectively modify these

behaviours. Current evidence does suggest that prisoners within England and Wales would be receptive to health promotions/interventions aimed at reducing their NCD risk-behaviours, with previous studies documenting large portions of prisoners expressing a desire to quit smoking (Department of Health and Prison Health Service, 2003; Lester et al., 2003), and increasingly seeking support in attempts to modify nutritional and physical exercise behaviours (Brooker and Sirdifield, 2007; Bailey and Kerlin, 2015). Furthermore, the literature from the UK and worldwide suggests that prisoners may be more receptive to such an intervention being delivered by their prisoner peers, as opposed to a professional member of staff (Grinstead et al., 1997; Brooker and Sirdifield, 2007; Magee and Foster, 2011), with this aspect explored more fully later in this chapter.

2.4 The potential to modify the behavioural risk-factors for NCDs through a peer-led intervention

One potential method of attempting to modify the NCD risk-behaviours highly prevalent among the prisoner population is through implementing a prison-based peer-led intervention aimed at reducing these behaviours. Peer-led interventions are defined as those that "involve the provision of education, support or counselling between individuals who are of equal social status or who share similar characteristics or who have common experiences" (South et al., 2014, p.6). In the prison environment, this concept of 'peerness' is based upon the premise that due to prisoners' shared experiences, prisoner peer-workers are deemed more credible sources of support and information than professional members of staff (Devilly et al., 2005; Fletcher and Batty, 2012; Woodall et al., 2015a; HMIP, 2016c). The theoretical rationale for why peers are deemed more credible than professionals in terms of influencing the behaviour of their peers is underpinned by the following four psycho-social theories; Social Learning Theory, Social Inoculation Theory, Differential Association Theory and Diffusion of Innovations Theory (Milburn, 1995; Mathie and Ford, 1998; Shoemaker et al., 1998; Harden et al., 1999; Turner and Shepherd, 1999; Devilly et al., 2005). The following four sub-sections present a critical review of each theory, with explicit reference made to the potential mechanisms by which peers may lead to

behaviour modification among their counterparts, particularly in the prison environment.

2.4.1 Social Learning Theory

The most often cited theory in the peer-intervention literature is Bandura's (1971) Social Learning Theory developed in 1971 (Turner and Shepherd, 1999). The central tenant of Social Learning Theory is that individuals learn behaviour both through direct experiences and through observing the experiences of others. In terms of direct experiences, behaviour is suggested to be learned through the positive and negative consequences experienced as a result of performing a given action; a concept often referred to in the psychological literature as positive/negative reinforcement. To take speeding as an example, if an individual were to drive over the speed-limit through an area controlled by speed cameras, and were fined as a result of this action, then they would be less likely to repeat such a behaviour faced with a similar situation in the future.

Although some behaviours may be learned through direct experiences in this way, Bandura (1971) suggested that not all behaviours are amenable to such learning, and highlighted the importance of learning through observational experience; modelling. In everyday life, individuals are exposed to 'models' such as parents, friends, work colleagues and influential personalities in the media. The theory proposes that through observing the actions and behaviour of these models, and the positive or negative reinforcement experienced by the model following a given behaviour, individuals learn these behaviours and can choose to adopt them when faced with similar situations.

The theory does not assume that individuals simply learn and imitate all modelled behaviour they are exposed to, as it acknowledges the influential role of attention in learning modelled behaviour i.e. that in order to learn an observed behaviour, individuals must pay due attention to the model and the behaviour being carried out by the model. Such attentional processes are suggested by Bandura (1971; 1986) to be highly influenced by the perceived attractiveness of the model, with more attention paid to models who are interesting and that display desirable qualities. It is this 'attentional processes' aspect of Social Learning Theory which authors have argued may explain the mechanisms by which peers are more likely

than non-peers to bring about behaviour change among their counterparts. This is because it has been postulated that individuals identify with and attend more to models who display similar characteristics to the individual, as individuals perceive such similar others as being credible (Shunk, 1998; Devilly et al., 2005). Moreover, the more an individual identifies with a model and perceives them as being credible, the more likely they are to learn and adopt the behaviours of the model (Bandura, 1986; Devilly et al., 2005).

In the context of the prison environment, Social Learning Theory would support the assumption that health behaviour change among prisoners can and may be effectively encouraged through utilising other prisoners to act as positive role models, through modelling the desired behavioural outcome of the intervention. For example, an intervention aiming to encourage healthier diets among prisoners may be more successful if led by another prisoner that models healthy eating behaviours, as opposed to a professional member of staff delivering such an intervention.

However, one criticism often levelled at Social Learning Theory, in the realm of peer-led initiatives, has been that while some behaviours are amenable to modelling by peers, others are not so susceptible to be modelled (Turner and Shepherd, 1999). For instance, a peer-led health intervention aiming to promote safer sexual practices would undoubtedly afford little opportunity for a peer-deliverer to model such behaviour that is being encouraged. Therefore this theory is limited in its ability to explain how peer-led schemes may work in terms of such target behaviours that are difficult for peer-workers to model in practice. Although a valid criticism, the NCD risk-behaviours which are the focus of this PhD study are arguably feasible for a prisoner peer-worker to model, dependent of course on the ability to find a prisoner peer-worker who engages in these target behaviours.

2.4.2 Social Inoculation Theory

A second theory often referred to in the theoretical literature pertaining to peer-led initiatives, particularly among youths, is the theory of Social Inoculation developed by McGuire in the early 1960s (Milburn, 1995; Mathie and Ford, 1998). In terms of health behaviour, this theory assumes that individuals do not

necessarily desire to engage in unhealthy or health risk-behaviours, but may do so as they lack the required negotiation skills to resist pressure from peers, or other social influences, to engage in such behaviours (Milburn, 1995; Mathie and Ford, 1998). The theory postulates that in order to strengthen an individual's resistance to pressure to partake in unhealthy behaviours, individuals need to be exposed to 'threatening' messages promoting the unhealthy behaviour, and potential counter-arguments to resist these pressures. By presenting individuals with threatening messages and their potential counter-arguments, individuals can become 'inoculated' to the potential pressures to engage in unhealthy behaviours, much in the same way that antibody resistance to a virus can be strengthened through exposing individuals to weakened forms of the virus through vaccination (Compton et al., 2016). To take drug use as an example, if an individual was being encouraged by a peer to engage in cannabis use, their resistance to such pressure would be increased if they had already been equipped with answers to counter persuasive arguments to engage in this behaviour. In the context of peer-led interventions, authors have suggested that peers, as opposed to professionals, may be more credible to present counter arguments against risky health behaviour messages (Harden et al., 1999; Mathie and Ford, 1998; Turner and Shepherd, 1999). This is particularly pertinent in the prison environment, where peer-pressure counter-arguments delivered by other prisoners who themselves have managed to resist social pressures to engage in unhealthy behaviours, can invoke far more engagement than such messages being delivered by professionals (Devilly et al., 2005).

However, as with Social Learning Theory, this theory has its limitations in explaining the adoption of healthy or health risk-behaviours. The theory is quite reductionist in nature, assuming that individuals are almost powerless in their resistance to pressure from their peers, merely adopting or rejecting behaviours based upon this powerlessness, or their learned resistance, with no acknowledgement of the role of individual choice in influencing individuals' motivation to engage in certain behaviours. Indeed, Coggans and McKellar (1994) have put forward similar arguments in their critique of the literature regarding peer pressure to engage in drug use, suggesting that participation in unhealthy behaviours cannot be explained solely by social inadequacy to resist

peer-pressure messages, but instead the important role of individual motivation must be considered.

While individual motivation is important in understanding the adoption of health behaviours (Michie et al., 2011), to some extent peer-pressure has been found to be highly influential in encouraging certain health-risk behaviours among prisoners, even when they have been actively motivated and have been making concerted efforts to abstain from that behaviour. For instance, both Tompkins et al. (2007) and Woodall (2011), through qualitative interviews with prisoners, found that those making serious attempts to abstain from drug use would frequently cite pressure from their prisoner peers as a significant barrier to such abstinence. As such, peer-pressure resistance messages delivered by other prisoners may be a valid method of discouraging participation in health risk behaviours in the prison environment.

2.4.3 Differential Association Theory

The theory of Differential Association developed by Sutherland and Cressey (1960) has been cited frequently in the peer-education theoretical literature to explain the underlying mechanisms by which peer-led initiatives may work (Milburn, 1995; Turner and Shepherd, 1999; Devilly et al., 2005). The theory was proposed to explain why some individuals go on to participate in criminal or deviant behaviour, while others do not. Rather than assuming that criminality and deviance can be explained by hereditary or psychological differences between individuals, the theory postulated that instead crime is a learned behaviour acquired in social situations in which more crime-experienced individuals associate with others, and teach them aspects pertaining to criminality. It is in these social associations that Sutherland and Cressey (1960) argue that individuals learn the necessary skills, techniques, attitudes, motivations and justifications to carry out crime.

Such theoretical propositions have led to popular arguments that peers can be negative influences on one another, teaching each other bad habits (Turner and Shepherd, 1999). This is particularly the case in prison environments, where anecdotal accounts and fictitious depictions of prisons portray them as being ‘schools of crime’, where prisoners learn ‘new tricks of the trade’ through the

sharing of criminogenic knowledge and skills with one another (Ouss, 2011; Samenow, 2011). Although the theory of Differential Association was originally developed to explain how individuals come to engage in criminal behaviour, academics in the field of health have argued that the concept of learning through association can actually be used to promote positive health behaviours among peers (Turner and Shepherd, 1999; Devilly et al., 2005). They posit that peers in their everyday associations can just as easily teach each other about 'positive habits' that promote healthy lifestyles, than they can about 'bad habits' encouraging negative and maladaptive lifestyles (Devilly et al., 2005). This more health promoting and alternative view of Differential Association Theory would suggest that prisoners engaging in positive health behaviours while in custody could potentially be utilised by prison healthcare services to 'teach' their prisoner peer associates how to also practice such healthy behaviour(s).

However, when applying the theory, the health promotion message would potentially have a limited reach. This is because the theory asserts that information is taught and learned among peers in their everyday social interactions with their frequent associates, and thus the health promotion message being encouraged by the prisoner peer-worker may not reach beyond their immediate social group, which may potentially be limited in its size (Turner and Shepherd, 1999). Such would suggest that any prison-based peer-intervention should look to recruit a peer-worker with a wide social network within the prison, to ensure any health promotion messages are disseminated as widely as possible.

2.4.4 Diffusion of Innovations Theory

The theory of Diffusion of Innovations (Rogers, 1983) has also been suggested to be applicable to peer-intervention work (Harden et al., 1999; Turner and Shepherd, 1999). The theory was proposed to explain the process by which new innovations (including novel behaviours) are adopted by individuals within established communities, with the assumption that all new behaviours follow a similar pattern of adoption. The theory postulates that innovative behaviours within communities are adopted at different rates of time, with some individuals readily adopting the innovative behaviour, whereas others are much slower in taking up the behaviour in question. Rogers (1983) argued that the length of time

individuals take to adopt a novel behaviour indicates their ‘innovativeness’, and classified ‘adopters’ into the following five categories; innovators who take up the novel behaviour immediately, the early adopters, the early majority, the late majority, and the laggards who may resist adoption of the behaviour altogether.

At the core of this theory is the principle of homophily; the degree to which individuals are similar in terms of their attributes. Rogers (1983) proposed that the more individuals are alike to each other, the more effective the communication between the individuals, leading to increased likelihood of knowledge transfer or attitude/behaviour modification. The theory acknowledges that the early ‘innovators’ are not necessarily the most effective in diffusing and encouraging the adoption of new behaviour among average community members, and this is because these innovators usually differ quite substantially from average community members with regards to their attributes, and thus there is a lack of homophily, and a lack of credibility. Instead, Rogers (1983) suggests that there are more credible ‘change agents’ within the community systems, a group which he refers to as ‘opinion leaders’. These ‘opinion leaders’ usually belong to the category of early adopters and are influential in diffusion of information pertaining to innovations. Their ability to influence is suggested to be a result of their shared attributes with the wider community (homophily), conformity with the social norms of the community and their social accessibility. It is through these key ‘opinion leaders’ that Rogers (1983) argues that diffusion of information and knowledge regarding new behaviour is diffused throughout and adopted by the wider community.

From the perspective of peer-led health initiatives, authors have suggested that peers delivering health interventions fit this criteria of key ‘opinion leaders’, due to their homogeneity with the participants whose behaviour modification is the focus of the intervention (Harden et al., 1999; Turner and Shepherd, 1999). Again, this is particularly pertinent to the prison environment, where there is more homophily between prisoners than there is between prisoners and staff, thus suggesting that diffusion of information relating to novel health behaviours which an intervention is trying to encourage may be more effectively communicated between the former than the latter.

However, as with Differential Association Theory, when applying this theory in practice, the reach of the health promotion message being encouraged by the intervention may be limited. This is because the theory assumes that novel health messages are diffused through existing social groups within specific communities (Turner and Shepherd, 1999). Due to this potential drawback, the selecting of prisoner peer-workers to deliver and diffuse health promotion messages would be of utmost importance, with due attention paid to selecting peer workers who are well known and respected by their prisoner peers being key to maximum dissemination of health messages among the prison population (Harden et al., 1999).

2.4.5 Summary of the psycho-social learning theories – credibility

Although each of the aforementioned theories differ with regards to the exact mechanisms by which peer-led initiatives bring about behaviour change among target populations, what all of them have in common is the concept of homophily leading to enhanced credibility (Harden et al., 1999; Devilly et al., 2005). All assume that peer-deliverers that are similar to the intervention target group are more likely than professionals to be perceived by individuals in the target group as being credible, whether that be credible sources of health information that is being promoted by a specific intervention, or credible role models displaying the behaviour that is being encouraged by the intervention. Based on this overlying credibility assumption, it could be argued that prisoner peer-workers may effectively be able to modify the NCD risk-behaviours of their prisoner peers, and to some extent, be better placed to encourage such behaviour modification than professional members of healthcare staff working in prison environments.

2.5 The prevalence and types of peer-led interventions in prisons

A plethora of peer-led interventions have been implemented in prisons across England and Wales, with such interventions now ingrained features of prison environments (South et al., 2014; HMIP, 2016c). Approximately 1 in 14 prisoners in England and Wales are involved in the delivery of peer-led schemes (Levenson and Farrant, 2002), with such initiatives spanning a wide array of areas including

health, housing, education, and general advice and guidance pertaining to prison life (HMIP, 2016c). Figure 2-1, adapted from a recent HMIP report (2016c), presents a summary of some of the peer-led initiatives currently operating in English and Welsh prisons.

Figure 2-1: Examples of current peer-led schemes in operation in English and Welsh prisons*

Existing peer-initiatives currently utilised in English and Welsh prisons		
Listeners	Buddies	Carers
Insiders	First night workers	Real voice
Housing peer-workers	Health champions	Wing representatives
Toe-by-toe mentors	Recovery champions	Lifer representatives
Learning mentors	Drug recovery mentors	Health representatives
Catering representatives	Disability representatives	Equality representatives
Gypsy/Romany/Traveller representatives	Foreign national representatives	Black and minority ethnic representatives
Anti-bullying representatives	Older/younger representatives	Violence reduction representatives

*Adapted from HMIP (2016c) report – approval granted to reproduce/adapt content

In terms of the format of prison-based peer-led interventions utilised in prison facilities worldwide, South et al. (2014) developed a useful typology of the different types of peer-schemes currently implemented, which include peer-education, peer-support, peer-mentoring and peer-outreach activities. Much of the literature that has explored peer-led health initiatives in prisons globally, and which are discussed later in this chapter, has primarily focussed on peer-education or peer-support types of intervention. The former involves prisoners providing formal and/or informal education to their peers, with the aim of increasing the knowledge and awareness of prisoners regarding a particular health issue, or to encourage actual health behaviour change among the prisoners. The latter consists of prisoners providing practical or emotional support to their peers, either formally on a one-to-one basis or informally through existing

social networks. The proliferation of peer-led health initiatives in prisons can be explained by the many perceived benefits to utilising such interventions in the prison environment, which include the following;

- enhanced credibility of the peer-workers leading to better engagement with their fellow prisoner peers (Devilly et al., 2005)
- the ability of peer-deliverers to connect with their prisoner peers, particularly those hard to reach groups that have been reluctant to engage with professionally-led health services (South et al., 2014; Bagnall et al., 2015)
- the potential positive benefits the peer-deliverers experience themselves as a result from working in such a role (Devilly et al., 2005; Bagnall et al., 2015; Woodall et al., 2015a)
- their perceived cost-effectiveness (Fletcher and Batty, 2012; Woodall et al., 2015a)
- their potential to reduce the demand on overly-burdened prison health services so that resources can be effectively prioritised to those individuals in most need of professional help (Devilly et al., 2005; South et al., 2014; Woodall et al., 2015a)

In light of their many potential benefits, numerous research studies have been conducted within English and Welsh prisons, and in prisons across the globe, exploring the impact of prison-based peer-led initiatives, both on the recipients of these interventions, and on the prison environment more widely; a summary of these studies is presented in the following sections. However, given that this PhD study is primarily focussed on the impact of peer-led initiatives on the recipients of these schemes, namely whether or not such schemes may be utilised to modify the NCD risk-behaviours of prisoners, the research studies focussing on the impact on recipients are discussed in greater depth, with only brief reference made to the impact on the wider prison environment (i.e. the peer-workers and the prison establishment).

2.6 The impact on recipients

2.6.1 Improvements in knowledge, attitude and behaviour

The literature pertaining to the impact of prison-based peer-led health interventions on the recipients of these interventions has generally focussed on peer-led HIV education schemes, and whether or not such schemes lead to changes in recipients' HIV knowledge, primarily through comparing prisoner participants' knowledge scores pre-intervention, to those obtained after receipt of the peer-led educational intervention. The findings of these studies are encouraging, concluding that prisoner-led interventions are effective in increasing prisoners' HIV knowledge (Collica, 2002; Dolan et al., 2004; Ross et al., 2006; Schlapman and Cass, 2000; Scott et al., 2004; Sifunda et al., 2008; Vaz et al., 1996), and are just as effective in enhancing knowledge as professionally-led education initiatives (Grinstead et al., 1997). For example, a large scale study undertaken by Ross et al. (2006), with 2,506 male and female prisoners in the United States of America (USA), revealed that the total HIV knowledge scores of prisoners that had received the peer-led intervention were significantly increased immediately post-receipt of the intervention than when compared to baseline ($z = 23.21$, $p < 0.001$).

The impact of peer-led educational interventions appear to go beyond just knowledge gain however, with evidence suggesting that such interventions can lead to modifications in prisoners' intentions to participate in HIV protective behaviours. Research from the USA and South Africa comparing prisoners receiving HIV peer-led education with control groups receiving no education, have demonstrated that intervention participants were significantly more likely to intend on reducing HIV risk sexual behaviours in the future than their control counter-parts (Grinstead et al., 1997; Sifunda et al., 2008). The findings of Sifunda et al. (2008) in South Africa were particularly encouraging, as they suggested that these positive intentions may be retained over time when prisoners are released into the community, where arguably individuals are more vulnerable to participating in HIV risk-behaviours on account of not being constrained by prison security regulations. For instance, in the study by Sifunda et al. (2008), data from one of the participating prison sites found that the groups

that had received the peer-led HIV intervention displayed significantly greater intentions than the control group to reduce their HIV risk-behaviour 3 to 6 months post-release from prison (F (1, 135) = 11.07, $p < 0.001$).

Along with intentions on reducing risk-behaviours, prison-based peer HIV education initiatives have also been found to be associated with positive intentions to undertake biochemical tests to identify whether or not prisoners are suffering from HIV. Grinstead et al. (1997) and Zack et al. (2012), with prisoners in the USA and Haiti respectively, found that prisoners who had received peer-led HIV education, were more likely than those prisoners that had not received HIV education to report a positive intention to undertake a HIV test (Grinstead et al., 1997; Zack et al., 2012), with both authors claiming these differences found between the groups to be significant. However, while Grinstead et al. (1997) provided supporting data from the inferential tests to support their results, the authors of the Haiti study did not, and thus it is unclear from the report whether or not the differences between the groups were in fact statistically significant as the authors claimed.

Although leading to improvements in knowledge and intentions, the extent to which prison-based peer-led initiatives actually lead to behaviour modification among recipients of these interventions is an area which has been less extensively explored, and again is predominantly confined to BBV prevention interventions in American incarceration facilities. While limited in their focus, these large scale randomised controlled trials demonstrated that male and female prisoners provided with peer-led BBV education were significantly more likely than control participants provided with standard care to engage in BBV sexual protective behaviours post release from prison/jail (Grinstead et al., 1999; Martin et al., 2008).

For example, in the study by Martin et al. (2008), the participants that received the peer-led intervention reported engaging in significantly fewer instances of unprotected sex post-release from custody, than the control group that received the standard care (32% versus 45%, $p < 0.05$). Moreover, the findings of Martin et al. (2008) suggest that the encouragement of behaviour modification following peer-led education is something that can be sustained over time, as rather than the data being collected shortly following release, all follow-up data regarding

participation in BBV sexual risk-behaviours were collected from participants approximately 90 days after their release from custody. Although appearing to show promise in reducing BBV sexual risk-behaviours, the same has not been found for reducing prisoners' BBV drug risk-behaviours. In the study by Grinstead et al. (1999), the authors found no significant differences between the peer-led intervention group and the control group on purported intravenous drug use or the sharing of needles upon release from custody, suggesting that the peer-led intervention was not effective in modifying these types of behaviours.

To date there has been no research conducted within English and Welsh prisons exploring direct links between peer-led initiatives and health behaviour change among recipients through well-constructed randomised controlled designs. However, quantitative and qualitative reviews of the peer-led Listener scheme appear to suggest there are perceptions among prisoners and staff that this scheme in particular has had positive impacts on the behaviour of prisoners. Surveys with prisoners and prison staff from different establishments in England and Wales reported that these participants felt that the Listener scheme had led to reductions in suicidal behaviour amongst prisoners at their establishment (Snow, 2002). These findings are further supported by those from qualitative interviews conducted with prisoner participants by Magee and Foster (2011), which revealed that prisoners felt the Listener scheme had actually saved lives. In addition to these findings, recipients of peer-emotional support schemes have highlighted the positive impact that being able to talk to another prisoner about their problems has had upon them emotionally. Consistent findings from qualitative interviews with Listener recipients across different prisons have reported the listening experience to provide a sense of relief to recipients (Magee and Foster, 2011; Jaffe, 2012a), with discussions with a Listener described as an opportunity for recipients to vent their frustrations and concerns, thus leading recipients to feeling more calm and stable post-Listener-discussion (Magee and Foster, 2011).

2.6.2 Preference for peer-led

In addition to these encouraging results regarding knowledge, attitude and behaviour change, qualitative evidence from the UK and Canada also appears to suggest that prisoners may be more receptive to, and engaged with, peer-led

health initiatives than schemes delivered by professional members of staff. Explorations into peer-support schemes have revealed that prisoners often perceive peers as better understanding prisoners' problems than members of staff (Delveaux and Blanchette, 2000; Magee and Foster, 2011; Snow, 2002; Syed and Blanchette, 2000a; Syed and Blanchette, 2000b), with this enhanced understanding attributed to shared experiences, whereby prisoner peer-workers are better able to empathise with other prisoners, as they have often experienced first-hand many of the problems faced by their peers (South et al., 2014).

Prisoners have also been found to view peers as being less judgemental then members of prison and healthcare staff, suggesting this to be a factor in choosing to engage with peer-led as opposed to professionally-led services (Magee and Foster, 2011; Syed and Blanchette, 2000a; Syed and Blanchette, 2000b). Not only has it been suggested that peer-workers are better at understanding and less judgemental than members of staff, prisoners have also suggested that these schemes are more accessible than services provided by professionals (Delveaux and Blanchette, 2000; Magee and Foster, 2011; South et al., 2014; Syed and Blanchette, 2000b). For instance, in the study by Magee and Foster (2011), one of the rationales put forth by the prisoner participants who chose to engage in Listener support, over other forms of support available, was the suggestion that Listeners are always on-hand to provide support, whereas busy, time-pressed staff are not.

Although there does appear to be a general preference among prisoners for peer-led initiatives over professionally-led schemes, this preference is not shared by all prisoners, with some studies finding evidence of prisoner resistance to peer-led schemes. For example, studies into peer-emotional support schemes in the UK and Canada revealed that some prisoners are not comfortable discussing their experiences with other prisoners, and would instead prefer to discuss their issues with professional members of staff (Delveaux and Blanchette, 2000; Jaffe, 2012b; Snow, 2002). Some of these reservations in accessing peer-support can be explained by the concern of prisoners that not all peer-workers may abide to confidentiality principles (Delveaux and Blanchette, 2000; Snow, 2002). For instance, in the study by Snow (2002), among participants who had never used the peer-led Listening service before, 37% of these indicated that this was

because of confidentiality concerns, a factor explored in greater depth later in this chapter in section 2.8.3. While the findings of Delveaux and Blanchette (2000), Jaffe (2012b) and Snow (2002) have revealed reservations towards prisoners accessing peer-support, it must be acknowledged that these studies focussed entirely on peer-led emotional support schemes, and thus it is unclear from the current evidence whether or not these findings are exclusive to emotional support forms of peer-intervention, or are applicable to educational or less emotionally-focussed peer-support schemes also. Thus there is a clear need to explore whether a peer-led intervention aiming to modify the NCD risk-behaviours of prisoners would be acceptable to prisoners.

2.6.3 Summary of the impact of prison-based peer health interventions on recipients

Research undertaken with prisoner recipients of peer-led health schemes is encouraging, suggesting that peer-led initiatives can have positive influences on recipients while in custody, with recipients also generally appearing to prefer peer-led when compared to professional-led delivery. In terms of the impact of these schemes, the evidence is strongest in terms of the impact of HIV prevention educational interventions, particularly in the area of knowledge gain, with results suggesting that prisoner-led education interventions can significantly improve the HIV related knowledge of prisoners. However, most of this research has not employed randomised controlled designs, with such designs recognised as the gold standard in the evaluation of healthcare interventions (Eccles et al., 2003), and thus the results are potentially open to biases. The extent to which prison-based peer-led educational schemes can help to modify prisoners' attitudes and actual health behaviour are aspects that have been less extensively explored, and again is limited to the impact of BBV interventions in prison institutions outside of the UK. Moreover, some of these findings have been mixed, with for example peer-led schemes appearing to be effective in modifying prisoners' BBV sexual risk-behaviours, but not their drug risk-behaviours.

There is also a distinct lack of evidence on the effectiveness of peer-led support types of schemes on prisoners' knowledge, attitude and behaviour, with such research limited to qualitative exploration of prisoner and staff perceptions towards the impact of these schemes. Both prisoner and staff perceptions of

these schemes have been positive though, with many believing these schemes to bring about positive behaviour change among prisoners. However, this does need to be explored further through well designed trials before any firm conclusions can be made regarding effectiveness.

Based upon the above, it is evident that future research is needed, particularly employing randomised controlled designs, to explore whether or not peer-led initiatives can help to modify the health knowledge, attitude, and behaviour of prisoners, before any firm conclusions can be made regarding the effectiveness of these schemes. Moreover, given there is a lack of research exploring the impact of peer-led initiatives on prisoners' smoking, diet and physical activity behaviour, it is unclear whether or not peer-led schemes may aid in modifying these NCD risk-behaviours, and thus future research should attempt to bridge this gap in knowledge. It is this gap in the literature which this current research aimed to address, with a statement of the aims and objectives for this PhD project provided at the end of this chapter.

2.7 The wider impact of prison-based peer-led health initiatives

While research has documented the benefits of prison-based peer-led health initiatives for the recipients of such interventions, research exploring the wider impact of these initiatives has suggested that the benefits of prison peer-led health schemes go well beyond their initial intentions, impacting positively on the prisoner peer-workers themselves, and the wider prison environment. As the scope of this PhD study is focussed primarily on the impact of a prison based peer-led intervention on the recipients of such an intervention, rather than going into great details around the impact of peer-led interventions on the peer-deliverers and the wider prison environment, these aspects are only briefly touched upon in this section.

Research conducted in the UK and internationally has consistently demonstrated that peer-workers delivering health interventions in prisons benefit from participation in such schemes. For example, research conducted with prisoner peer-workers has documented that peer-workers report the following benefits of working in these roles; experiencing increases in confidence and self-worth (Dhaliwal and Harrower, 2009; Hall and Gabor, 2004; Magee and Foster, 2011;

Perrin and Blagden, 2014; Pollack, 1993), developing new and enhancing existing skills (Bailey and Kerlin, 2015; Brooker and Sirdifield, 2007; Dhaliwal and Harrower, 2009; Edgar et al., 2011; Hall and Gabor, 2004; Jaffe, 2012b; Magee and Foster, 2011), being viewed in a more positive light by other prisoners and members of staff (Collica, 2010; Edgar et al., 2011; Jaffe, 2012b; Perrin and Blagden, 2014) and being better able to manage their own problems while in custody (Delveaux and Blanchette, 2000; Edgar et al., 2011; Jaffe, 2012b; Magee and Foster, 2011; Perrin and Blagden, 2014).

Moreover, peer-workers and members of staff have described the opportunity for prisoners to work in peer-led health roles as a constructive use of time while in custody (Brooker and Sirdifield, 2007; Delveaux and Blanchette, 2000; Edgar et al., 2011; Hall and Gabor, 2004; Perrin and Blagden, 2014; Woodall et al., 2015a). Additionally, peer-workers delivering such interventions have also self-reported positive shifts in their own health knowledge, attitude and behaviour (Bailey and Kerlin, 2015; Brooker and Sirdifield, 2007; Collica, 2010; Ross et al., 2006), with prisoner Health Trainer's in the UK reporting the role to have impacted upon their own motivations to eat healthier and cut down their smoking behaviour (Bailey and Kerlin, 2015; Brooker and Sirdifield, 2007).

Although much research into the impact of prisoners working in peer-led health roles has documented the many perceived benefits these peer-workers experience, it must be acknowledged that not all of the impacts on the peer-workers are beneficial, with some research documenting negative aspects, such as the emotional burden of the role and potential burnout (Dhaliwal and Harrower, 2009; Jaffe, 2012b). Scholars have particularly expressed concern about the emotional burden peer-workers may experience, as evidence has documented the emotional struggle peer-workers have reported when speaking with other prisoners who have been in extreme states of distress (Dhaliwal and Harrower, 2009; Edgar et al., 2011; Jaffe, 2012b; Magee and Foster, 2011). However, it must be noted that all of this research regarding emotional burden has been conducted with peer-workers providing emotional support to other prisoners, and thus this finding may be unique to this type of peer-led initiative, and therefore not necessarily felt by peer-workers delivering more educational, or less emotionally focussed schemes.

As well as benefitting the peer-workers delivering interventions, the implementation of peer-led health schemes in prisons appears to benefit the prison environment more widely. Staff and peer-workers interviewed in UK prisons who have been involved with peer-led initiatives have often suggested a belief that the embedding of peer-led health schemes have led to more positive, calmer and controlled prison environments (Davies, 1994; Magee and Foster, 2011; Snow, 2002; Woodall et al., 2015a). This has been suggested to be a result of peer-led schemes contributing to reduced levels of violence and instances of disruption to the prison regime (Magee and Foster, 2011; Woodall et al., 2015a). In addition to creating more positive environments, research has also suggested that these schemes can reduce the burden on the workload of prison and healthcare staff, ensuring that professional resources are more effectively targeted at those most in need of help (Edgar et al., 2011; Jaffe, 2012b; Magee and Foster, 2011; Snow, 2002; Woodall et al., 2015a). The stakeholders that participated in the expert symposium undertaken by Woodall et al. (2015a) explained that peer-workers help reduce the burden on already stretched prison and healthcare resources, through handling the low-level queries where practical advice or support is required, thus allowing prison and healthcare staff to undertake more specialised duties.

Although potentially beneficial to prison environments, expressions of concern have also been raised regarding the potential negative impact peer-led schemes may have on the wider order and control of the prison environment, which is clearly of paramount importance to prison services globally (Gatherer et al., 2014). Concerns have been raised from participants in research studies exploring the use of prison-based peer-led health initiatives, particularly among staff participants, that the schemes may be abused, by the peer-workers or the recipients of the schemes, to traffic drugs, pass messages, obtain extra time out of cell or be used as a social opportunity (Davies, 1994; Hall and Gabor, 2004; Magee and Foster, 2011; Snow, 2002; Woodall et al., 2015a). While of clear concern, there is a distinct lack of empirical evidence to suggest that peer-led schemes are abused in these ways, with only relatively few references made to peer-workers having been found to be abusing their position through the distribution of contraband around prison establishments (Jaffe, 2012b; Magee

and Foster, 2011; Woodall et al., 2015a). Nonetheless, given the potential for such abuses to impact upon the credibility of peer-schemes (Woodall et al., 2015a), both developers and evaluators of prison-based peer schemes should be mindful of the potential for abuse, and, where possible, should capture instances of such occurring.

2.8 Prison-based peer-led health schemes – implementation considerations

In addition to revealing the many impacts of peer-led health interventions on recipients, peer-workers and the wider prison environment, research exploring peer-led health schemes in prisons world-wide have identified numerous factors which should be considered in the successful implementation and embedding of these schemes in prison environments. Key considerations include the selection and training of peers, security/confidentiality issues, and barriers/facilitators to implementation.

2.8.1 Selection of peers

A key and consistent theme in the research exploring factors pertaining to the implementation of peer-led health schemes in prisons is the importance placed upon the selection of peer-workers with positive qualities and characteristics, with such perceived to be crucial to the credibility of these schemes (South et al., 2016). Qualitative work undertaken with prisoners, staff and trainers of prisoner peer-workers has suggested the following to be key traits to look for in peer-workers; demonstration of pro-social behaviours (Sirdifield, 2006), resilience (Dhaliwal and Harrower, 2009), maturity (Davies, 1994), respected by other prisoners and staff (Davies, 1994; Scott et al., 2004), good communication skills (Brooker and Sirdifield, 2007), helpfulness (Brooker and Sirdifield, 2007; Bailey and Kerlin, 2015), approachability (Bailey and Kerlin, 2015), a genuine motivation to help others (Davies, 1994), and arguably most importantly, trustworthiness (Bailey and Kerlin, 2015; Edgar et al., 2011). Prisoners and staff participating in the study by Scott et al. (2004) also placed a high degree of importance on ensuring the peer-workers were representative of the wider prisoner population in terms of demographic characteristics, suggesting that this was crucial in

ensuring a more effective connection between the peer-workers and the prisoner recipients of the HIV prevention intervention under study. This links back to the earlier discussion in this chapter on the theory of peer-led initiatives, appearing to support the assumption that more attention is paid to, and more effective communication is facilitated by, intervention leaders who are more homophilous to the intervention target population.

While not a specific personal quality, security approval also appears to be pivotal in the selection of peer-workers delivering health initiatives. Research in the UK and the USA exploring peer-workers delivering different types of health initiatives, from HIV prevention educational interventions to emotional support interventions, have all found approval by the prison security department to be a crucial determinant in whether or not prisoners are deemed suitable to undertake peer-worker roles (Bailey and Kerlin, 2015; Davies, 1994; Edgar et al., 2011; Magee and Foster, 2011; Ross et al., 2006). Central to this security approval process is the assessment of whether or not prisoners can be trusted to work in peer-roles, with any indication that prisoners may be open to abusing the role precluding them from being eligible as a peer-worker (Magee and Foster, 2011; South et al., 2016). Such a focus on the trustworthiness and security vetting of peers is unsurprising given the focus of the prison environment on maintaining order and control.

2.8.2 The training of peers

Scholars have argued that the appropriate training of peer-workers to deliver health interventions in prison environments is a crucial implementation factor to consider (Devilly et al., 2005; Dubik-Unruh, 1999). Indeed, interviews conducted with Listener peer-workers in numerous prisons across England and Wales have revealed a perception among these peer-workers that the training provided to them prior to undertaking the role was pivotal in preparing them for managing the different scenarios they could be faced with, and was thus highly valued by these peer-workers (Jaffe, 2012b; Magee and Foster, 2011). However, the research exploring the use of health trainers in UK prisons undertaken by Brooker and Sirdifield (2007) would appear to suggest that the managers of peer-led schemes should take into consideration the educational level the training for peer-workers is pitched at. The tutors that trained the peer-workers in Brooker and Sirdifield's

(2007) study believed that some of the training was far too complicated for its intended audience, and would have been more appropriate if pitched at a lower level. For instance, they suggested the training about the physiological responses to smoking and its impact on the anatomy was overly-complex for the prisoner peer-workers, and thus was not appropriate. This is an important consideration given the fact that prisoners in the UK and across the globe have low levels of education, with many facing literacy and numeracy difficulties, with some completely illiterate (Amodeo et al., 2009; George, 2016; Prisoners Education Trust, 2015). These low levels of education and literacy do not however preclude prisoners from being trained as effective peer-workers, as these factors have been suggested by some scholars to be effectively mitigated through the provision of multi-sensory peer-worker training that does not solely rely on materials in the written format, but instead uses a variety of learning modalities such as drawings, videos and participatory role-play activities (Dubik-Unruh, 1999).

2.8.3 Security/confidentiality

As mentioned previously, staff members working in prisons where peer-led health initiatives have been implemented have expressed concerns regarding security, with a belief among some staff members that the interventions may be abused by peer-workers, or their recipients, to engage in negative behaviours that are against the prison rules and regulations (Davies, 1994; Hall and Gabor, 2004; Magee and Foster, 2011; Snow, 2002). The abuse of peer-schemes, either by the recipients of the interventions or the peer-workers themselves, are potentially highly problematic as they can lead to reduced credibility and a loss of staff support for the scheme. For instance, in Jaffe's (2012b) exploration of the prison Listener scheme, the prison staff interviewed reported that in instances where Listeners were found to have abused the increased freedom associated with working in the role, this severely de-valued the trust of the staff members in the scheme, and their positive perceptions of the work Listeners were doing.

Such a loss of credibility has clear potential to then impact upon the delivery of peer-schemes, as buy-in among frontline prison staff is suggested to be key to the successful implementation of peer-led schemes (Edgar et al., 2011; Woodall et al., 2015b). Arguably there is less likely to be buy-in from staff where levels of

distrust about peer-schemes exist. Indeed, the prison staff interviewed by Jaffe (2012b) often reported to exerting greater control over the prisoner Listener workers in response to the perceived risks they pose as a result of their enhanced freedom to move around the prison establishments. These findings would suggest that to ensure the credibility of peer-schemes, and thus the subsequent buy-in of prison staff, developers of prison-based peer-interventions should introduce appropriate measures to mitigate against breaches in the rules and regulations set by the prison. As discussed earlier in this chapter, this is already practised to an extent, with research from both in and outside of the UK indicating a strict security selection process for prisoners delivering health initiatives in custody (Bailey and Kerlin, 2015; Davies, 1994; Edgar et al., 2011; Magee and Foster, 2011; Ross et al., 2006).

Related to these potential abuses of peer-led schemes, key stakeholders have also expressed concern regarding prisoner peer-workers adhering to codes of confidentiality. Studies using qualitative interviews and quantitative surveys have revealed that some prisoners are sceptical about the extent to which peer-workers providing emotional support keep their discussions with their clients confidential; with a belief that peers sometimes disclose confidential discussions to other prisoners or staff members (Delveaux and Blanchette, 2000; Jaffe, 2012b; Pollack, 1993; Snow, 2002). These concerns have not only been expressed by prisoners, but also by members of staff working within prisons (Brooker and Sirdifield, 2007; Snow, 2002). This perception that peer-workers may not always adhere to confidentiality principles may be detrimental to the functioning of peer-led health schemes, particularly from the point of prisoner perceptions, as it may deter prisoners from participating in health initiatives that are led by peers as opposed to members of staff. Indeed, a very small amount of research conducted with non-users of peer emotional support initiatives has suggested that such may be the case, with both Delveaux and Blanchette (2000) and Snow (2002) finding evidence of prisoners stating to be deterred from using peer-led services primarily due to a concern that their discussions would not be kept confidential by the prisoner peer-workers. Given this potential consequence of lack of uptake of peer-services due to confidentiality concerns, any future intentions to introduce peer-led health schemes in prisons should make efforts to

ensure that peer-workers fully understand and adhere to principles of confidentiality, with peers removed from such roles if found to be breaking these important rules.

2.8.4 Barriers/facilitators to implementation of peer-led health schemes in prisons

2.8.4.1 Retention

Studies both in and outside of the UK have frequently reported that one of the difficulties often encountered by peer-led health schemes within prisons is the attrition of peer-workers, with such attrition mainly attributed to the peer-workers either being transferred to another prison or released from custody due to their sentence coming to an end (Brooker and Sirdifield, 2007; Delveaux and Blanchette, 2000; Edgar et al., 2011; Magee and Foster, 2011; Scott et al., 2004). Some studies even reported that this occurred shortly after the peer-workers had completed their training (Brooker and Sirdifield, 2007; Delveaux and Blanchette, 2000), meaning there was little time for them to actually deliver the intended intervention to their peers. This clearly has the potential to disrupt the delivery of peer-led schemes, with frequent high turnover possibly leading to instances where there are no peer-workers in place to deliver the intended intervention.

While evidently problematic, the literature has identified numerous procedures that could be adopted to mitigate against the issue of limited retention. One of these relates to putting ‘a hold’ on the prisoner peer-workers to ensure that they remain resident in the prison upon completion of their training, and are not transferred elsewhere (Brooker and Sirdifield, 2007; Edgar et al., 2011). However, ‘holds’ would not suitably mitigate against keeping peer-workers who are only serving short sentences and are likely to be released in the imminent future. Regarding this latter point, Edgar et al. (2011) suggest flexibility with the peer-worker training in terms of reducing its length and intensity. They argue that such flexibility with training may potentially enable prisoners suitable for peer-roles, but whose stay is likely to be relatively short, the opportunity to deliver the intervention within the prison environment, albeit for a limited time only. One final recommendation is to over-recruit prisoners into peer-worker positions (Scott et

al., 2004), to ensure that peer-worker roles are always filled and thus mitigating against gaps in delivery.

2.8.4.2 Access

A further, often cited, barrier to peer-led health schemes is access to the schemes by prisoners. Studies exploring prisoners providing emotional support to their peers have documented the difficulties with regards to facilitating access between peer-workers and their prisoner peers who have requested one-to-one support (Hall and Gabor, 2004; Jaffe, 2012b; Magee and Foster, 2011; Pollack, 1993). As acknowledged by Jaffe (2012b), such difficulties arise because peer-workers are in most cases reliant on prison staff within the establishment to escort them around the prison and facilitate the 'call-outs', particularly at night when all prisoners, regardless of their job role, are expected to be locked behind their cell door (Jaffe, 2012b; Magee and Foster, 2011). Indeed, these difficulties with movement and access do appear to be more prevalent in periods of lockdown (i.e. overnight or when undertaking a roll-call), where prisoners are locked in their cells and when staff time is limited due to lower numbers of staff on duty or attention being directed at the undertaking of other tasks (Jaffe, 2012b; Magee and Foster, 2011).

It is not just one-to-one emotional support interventions that have been hampered by issues with access though, as barriers to access have also been reported in a study exploring HIV prevention educational interventions in prisons in the USA. Scott et al. (2004) documented that the education sessions for intervention recipients were frequently cancelled to accommodate standard education sessions, with such cancellations limiting the ability for recipients to receive the full educational sessions as intended. These difficulties with regards to access are potentially problematic, as it has been suggested that a lack of intervention fidelity (i.e. the intervention being delivered as intended) may lead to a lack of impact, and moreover may lead researchers to incorrectly dismiss interventions as ineffective, when rather this lack of impact may be explained by the failure to implement the intervention as intended (Mars et al., 2013). Future research exploring the impact of prison-based peer-led health interventions should capture data relating to access to these schemes, to enable researchers to correctly draw

conclusions regarding whether or not peer-led schemes are effective, and if not whether this can be explained by a lack of fidelity.

2.8.4.3 Staff

A final barrier to successful implementation and embedding of peer-led health schemes in prisons is the attitude of staff towards such schemes. As acknowledged by Edgar et al. (2011), Jaffe (2012b) and Magee and Foster (2011), small numbers of staff, mainly working in custodial functions, have expressed negative attitudes towards peer-led health schemes, and have resisted attempts to implement these interventions in English and Welsh prisons. These negative attitudes and resistance towards peer-led initiatives are partially explained by findings discussed earlier pertaining to staff distrust of peer-worker roles, and the potential abuses such roles may facilitate (Woodall et al., 2015a). Evidence from studies undertaken by Edgar et al. (2011) and Woodall et al. (2015a) suggest that some of the resistance from custodial staff can be further explained by a perception among these members of staff that prisoners are being increasingly employed into peer-worker roles to replace the roles of paid staff, which in turn are decreasing year on year in light of budget cuts to prison and healthcare services. In light of these cuts to budgets and custodial staff numbers, it is understandable that custodial staff may resent and resist attempts to implement future peer-led schemes in prisons, and thus developers of peer-led health schemes need to be aware of this.

In addition to resistance, evidence also suggests that staff may not always be aware of the existence of peer-led schemes in their institutions (Delveaux and Blanchette, 2000; South et al., 2016), which may act as a further barrier to prisoner uptake of peer-led schemes, as staff are key sources of information regarding potential services on offer. This is aptly reflected in Jaffe's (2012b) findings where just under 50% of the 320 prisoners surveyed across four prison sites in England and Wales reported knowing about the prisoner Listener scheme as a result of information provided by members of staff. While staff resistance towards and unawareness of peer-led health schemes are clear barriers to successful implementation and facilitation of these services, scholars have suggested that these may be overcome through raising the awareness of the existence of peer-led health schemes among staff, and in particular highlighting

the benefits that peer-led initiatives may have for them (Edgar et al., 2011; South et al., 2016).

2.8.5 Summary of pertinent implementation considerations

Research undertaken both inside and outside of the UK highlights that the implementation of peer-led schemes focussing on improving the health of prisoners within prisons is not an easy task, with numerous key considerations unique to the prison environment that need to be taken into account to ensure the successful embedding of these schemes within prison establishments. Selection of appropriate peer-workers with positive qualities, such as approachability and trust-worthiness, is frequently mentioned, as is the suggestion that the prison security department must be involved in the vetting of these peer-workers before they commence in the role. Appropriate training of these peer-workers is also crucial to help peer-workers in preparation for working in the role, with such training suggested to be pitched at an appropriate level for the skill level of most prisoners. Moreover, the training should comprise of multi-sensory tasks that are not overly reliant on materials in the written format.

Once recruited and trained, the retention of prisoner peer-workers may prove challenging due to these workers either being transferred to another establishment or being released upon completion of their sentence. The potential for peer-workers and recipients of peer-led interventions to abuse these schemes to circumvent prison rules and regulations is of deep concern to many staff, and may contribute to staff resistance towards the implementation of these schemes. Staff attitudes towards peer-led schemes may also be further hampered by a lack of awareness of these schemes and a negative perception that these initiatives are a way of replacing staff jobs, which in turn are increasingly being cut. Staff have also expressed concerns regarding peer-workers' ability to adhere to confidentiality principles, a concern which is also shared by recipients and non-recipients of peer-led schemes, and may deter prisoners from participating in peer-led initiatives. Finally, once implemented and engaging with prisoners looking to seek help from these schemes, access for recipients may be restricted due to regime or logistical issues, with such restricted access most likely to occur during times of prisoner 'lock-down'.

2.9 Chapter summary – overview of the literature and aims of the current PhD study

The prevalence of NCD risk-behaviours among prisoners in the UK is alarmingly high and thus there is scope to help prisoners modify these behaviours during their time spent in custody. Current evidence from across the globe suggests that peer-led interventions may be utilised to modify these NCD risk-behaviours, as not only do prisoners appear to prefer peer-led delivery, suggesting that such delivery promotes better engagement, but peer-led delivery has also been found to impact positively on the health knowledge, attitude and behaviour of prisoners, particularly in the area of BBV related health. Peer-led health schemes also appear to have positive impacts on the prisoner peer-deliverers of these schemes and on the prison environment more widely.

However, there is a distinct lack of research exploring the impact on recipients of peer-led initiatives which focus on NCD risk-behaviours, and thus there is scope to address this gap in the literature. As randomised controlled trials are the gold standard in the evaluation of health interventions (Eccles et al., 2003), this method should be employed to address this gap in the literature to explore whether or not peer-led schemes are effective in reducing NCD risk-behaviours among prisoners. However, given that to date no such studies have been conducted, it is unclear whether or not the undertaking of such a trial in a prison environment would be feasible. Thus the aim of this PhD study was to undertake a feasibility study to explore whether or not a full-scale definitive trial exploring the effectiveness of a peer-led intervention in modifying the NCD risk-behaviours of prisoners is feasible.

Before undertaking this feasibility study, it was apparent that initial research was required to further explore the implementation issues just previously discussed, as well as exploring the views of key-stakeholders regarding the context of the NCD risk-behaviours in the prison environment, to help the researcher develop an appropriate peer-led intervention to address prisoner NCD risk-behaviours. Thus the researcher decided to undertake the research in two phases; phase one explored intervention development and implementation issues, while phase two comprised the feasibility study which explored the use of a peer-led scheme to

modify the smoking, diet and physical activity behaviour of prisoners. The objectives for each of the phases were as follows;

Phase one

- To explore key stakeholders views about the NCD risk-behaviours in the prison environment
- To explore key stakeholders views about peer-led initiatives, specifically towards a peer-led scheme to reduce the NCD risk-behaviours of prisoners

Phase two

- To explore the feasibility of undertaking a full-scale trial exploring the effectiveness of a peer-led intervention to modify the NCD risk-behaviours of prisoners through the assessment of; recruitment and retention, randomisation acceptability, intervention attendance, intervention fidelity, intervention acceptability, contamination and completion of specific data collection measures over the trial period
- To explore the potential efficacy of the peer-led intervention

The following chapter presents the methodological design adopted to conduct this overall PhD project.

Chapter 3 Methodology

3.1 Introduction

This chapter presents the research methodology and specific approaches to enquiry undertaken throughout this PhD research. It begins with a discussion of the different methodological approaches most often used by healthcare researchers, with the rationale provided for the decision to adopt a mixed methods approach to meet the specific aims and objectives of this thesis. The remainder of the chapter then presents the specific qualitative and quantitative approaches adopted throughout this overall mixed methods study.

3.2 Choosing an appropriate methodological approach

The three main methodological approaches to research enquiry that may be adopted by researchers include quantitative, qualitative and mixed methods methodologies (Bryman, 2006). This section of the chapter briefly outlines these three main methodological approaches, presenting to the reader the rationale for why a mixed methods methodology was utilised to guide this overall PhD study. The specific mixed methods design adopted is also critically discussed.

3.2.1 Quantitative methodology

Teddlie and Tashakkori (2009) define quantitative methodology as research that is "associated with the gathering, analysis, interpretation, and presentation of numerical information" (p.5). Historically health research has been dominated by researchers employing such a methodology (Navarette, 2009; O'Cathain et al., 2007), primarily because the quantitative focussed randomised controlled experimental trial has been advocated as the gold standard in the evaluation of health interventions (Eccles et al., 2003; Crispino, 2013). Research employing a quantitative methodology tends to take a deductive approach to the testing of theories and hypotheses, through exploring the associations between specific variables (Bryman, 2001; Creswell, 2014). This testing of theories and hypotheses is based upon prior knowledge, such as existing theories and/or the

results of previous empirical studies undertaken in the area under exploration. The philosophical worldview most often associated with quantitative methodology is post-positivism (Creswell and Plano Clark, 2011). This worldview is underpinned by a deterministic and reductionist philosophy, assuming that phenomena are determined by specific causes which may be researched through reducing theoretical ideas to specific variables which can then be tested empirically to either refute or refine theory (Creswell, 2014). This worldview also assumes that there is a singular truth that exists that can be uncovered through careful and objective measurement of phenomena through standardised data collection tools, with checks often introduced to eliminate the potential for researcher bias to influence study results (Creswell and Plano Clark, 2011).

3.2.2 Qualitative methodology

Although traditionally dominated by quantitative methodology, qualitative methodology has become increasingly popular in health research (Bowers et al., 2014). While there is no one accepted definition of qualitative methodology, this methodology can generally be described as one that employs empirical methods, such as interviews and observation, to study people in their natural setting (Denzin and Lincoln, 1998; Pope et al., 2002). Rather than using deductive methods of enquiry and working with numerical data, qualitative studies tend to collect and analyse data that is in narrative form and that is inductive in nature, working from the bottom-up to generate themes and theory from the data collected (Creswell, 2014; Teddlie and Tashakkori, 2009). The philosophical worldview often associated with qualitative methodology is also very different to the one underpinning quantitative methodology, with qualitative researchers often employing a constructivist worldview (Teddlie and Tashakkori, 2009). The constructivist worldview assumes that the meanings individuals ascribe to a particular phenomenon under investigation are shaped by their own personal experiences and social interactions with others (Creswell and Plano Clark, 2011). Thus this worldview does not assume that there is one singular truth to be uncovered, but rather multiple realities exist, and the role of the researcher is to gain an in-depth understanding of the complexity of these multiple truths (Creswell, 2014). The constructivist researcher also recognises the influential role that their own personal experiences and biases have on research, explicitly

acknowledging these and how they may have influenced the researcher's interpretation of the findings (Creswell and Plano Clark, 2011; Creswell, 2014).

3.2.3 Mixed methods methodology

Historically research enquiry has been dominated by researchers working from a purely quantitative approach or a purely qualitative approach (Tashakkori and Teddlie, 1998), each of which have been discussed above. However, in recent decades, mixed methods methodology has become an increasingly popular form of enquiry, becoming more frequently adopted by researchers undertaking health and social research (Tariq and Woodman, 2013; Creswell, 2014). In mixed methods studies, both quantitative and qualitative enquiry are used to explore the phenomenon under investigation, as the use of both types of enquiry together are assumed to better answer the research question(s) than either type of methodology used alone. Thus in mixed methods studies, the nature of enquiry is both inductive and deductive, with the collection and subsequent analysis of data both in the numeric and narrative form. The pragmatic worldview is the one that is most often associated with mixed methods enquiry studies (Creswell and Plano Clark, 2011; Teddlie and Takkashori, 2009). This worldview discards the forced either/or choices associated with the directly opposing post-positivist and constructivist worldviews (i.e. singular versus multiple truths, deductive versus inductive enquiry), with the focus instead placed upon what works best to answer the research question(s) under exploration (Teddlie and Takkashori, 2009). The worldview is pluralistic in nature, assuming that there may be both singular and multiple truths, placing equal value on both objective and subjective knowledge (Creswell and Plano Clark, 2011). As with constructivist researchers, pragmatists acknowledge and explicitly state their values and potential biases, and how these may have influenced the interpretation of results (Teddlie and Takkashori, 2009).

Although increasingly used by health researchers and by researchers in other fields, consensus as to what constitutes a mixed methods form of enquiry is currently unclear. This is evident in the many different definitions advanced by experts in the field (Johnson et al., 2007), with these different definitions placing different emphasis on which level the research process is being mixed; i.e. at the level of philosophy, research design and/or methods (Creswell and Plano Clark, 2011). For instance, some definitions have focussed on the mixing of methods;

"mixed methods research involves the sequential or simultaneous use of both qualitative and quantitative data collection and/or data analysis techniques" (Curall, 2007, as cited in Johnson et al., 2007, p.119), whereas others have emphasised the mixing of methodology and philosophy; "mixed method enquiry is an approach to investigating the social world that ideally involves more than one methodological tradition and thus more than one way of knowing, along with more than one kind of technique for gathering, analyzing, and representing human phenomena, all for the purpose of better understanding" (Greene, 2007, as cited in Johnson et al., 2007, p.119). Moreover, some authors have emphasised the need for the mixing of methods to take place within a singular research study (Chen, 2007, as cited in Johnson, 2007), while others have suggested that the mixing may take place over a series of separate but related studies (Tashakkori and Creswell, 2007). In 2007, Creswell and Plano Clark (2007), in their textbook dedicated to the design and conduct of mixed methods research, put forward a broad and inclusive definition of mixed methods enquiry, stating it to be;

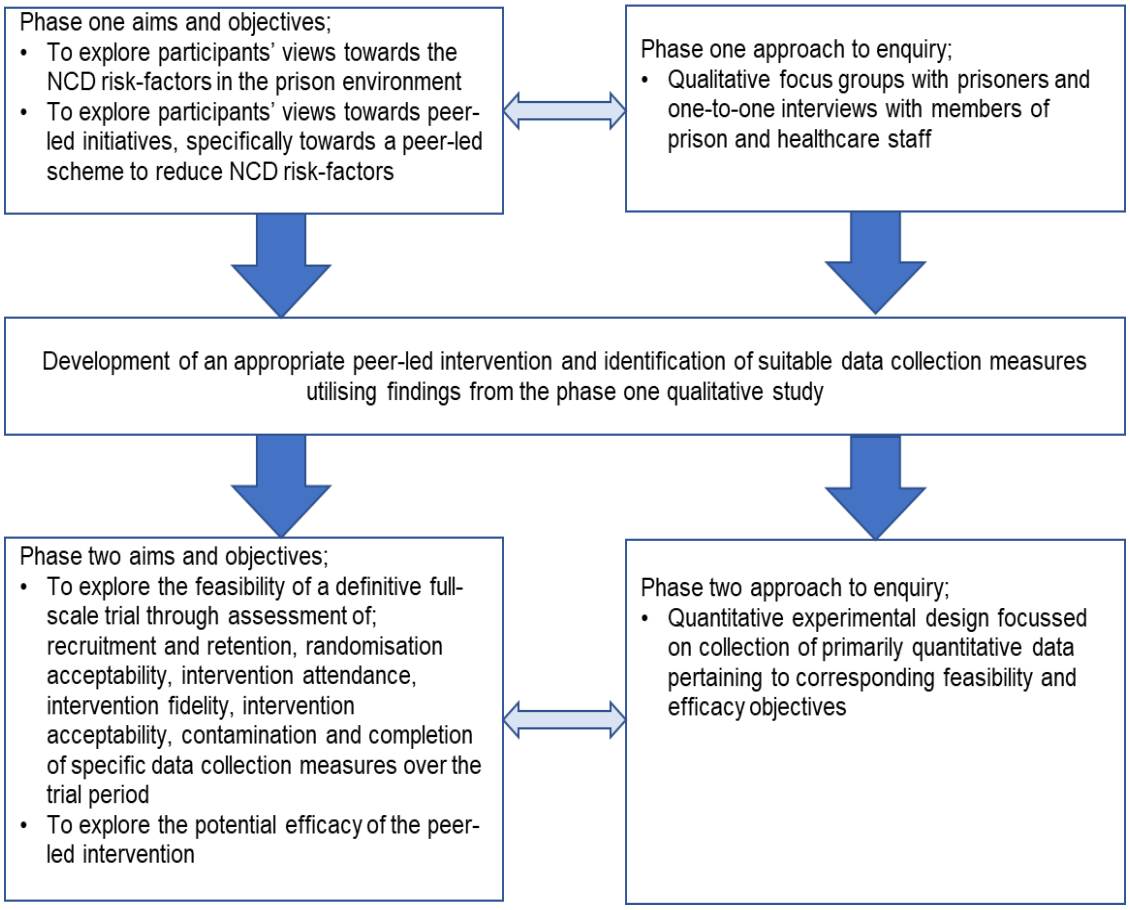
> *"a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis and the mixture of qualitative and quantitative approaches in many phases of the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone" (Creswell and Plano Clark, 2007, p.5).*

This current PhD study aligns to this inclusive definition of mixed methods research enquiry developed by Creswell and Plano Clark (2007), as it has utilised, in a multi-phase study, both qualitative and quantitative viewpoints and data collection and analysis procedures, to explore the overall objective of this PhD thesis. In order to answer the overarching research question, it was necessary to first understand the context of the NCD risk-behaviours in the prison environment, and the views of both prisoners and staff members towards the development of a peer-led intervention, so that an appropriate peer-led intervention to modify the NCD risk-behaviours of prisoners could be developed.

Indeed, such engagement with key stakeholders in developing behavioural change interventions is recognised as vitally important to ensuring intervention appropriateness, and thus is included in key guidelines pertaining to intervention development (NICE, 2007; NICE, 2014). This stakeholder engagement constituted the first phase of this PhD study and utilised qualitative enquiry. The rationale for adopting qualitative enquiry to explore stakeholder views was because this form of enquiry allows researchers to explore in-depth the contextual factors pertinent to the behaviour that is the focus of the intervention (Gilgun and Sands, 2012; Meissner, 2011), with such an in-depth understanding making it more likely that the resultant intervention developed will be effective and responsive to the needs of the service users intended to receive the intervention (Samson et al., 2009; Sullivan-Bolyai et al., 2005). The specific qualitative approach taken to explore stakeholder views is provided later in this chapter in section 3.3.

Following the development of the intervention in this way, the researcher then implemented the intervention and assessed the feasibility of undertaking a full-scale definitive randomised controlled trial exploring the effectiveness of the intervention in modifying prisoner NCD risk-behaviours. This constituted the second phase of the PhD research and primarily involved quantitative enquiry and the use of an experimental design (see section 3.4 for rationale for utilisation of an experimental design). This was because the specific feasibility objectives being explored, such as recruitment, retention and completion of specific data collection measures, were felt to be better addressed through quantification and statistical analysis. Thus, in summary, a mixed methods methodological approach was taken for this PhD study as it was felt that the different research questions being asked by each of the two phases of the research were better addressed through utilising different forms of enquiry, qualitative for phase one and quantitative for phase two. The two different phases and form of enquiry used for each are presented diagrammatically in Figure 3-1 below.

Figure 3-1: Overview of the mixed methods exploratory sequential research design



The decision of the researcher to undertake a qualitative study first to inform the development of an appropriate peer-led intervention to be delivered during the phase two experimental study conforms to the 'exploratory sequential mixed methods' design put forward by Creswell and Plano Clark (2011). In this type of mixed method design, the research is undertaken in two discrete phases which are implemented sequentially. In the exploratory sequential design, the researcher begins through the collection and analysis of qualitative data to explore in-depth a particular phenomenon, with the results from the analysis then used to develop or inform the second quantitative phase. In this PhD research, the first phase consisted of qualitative focus groups and one-to-one interviews with key stakeholders which explored their views towards the NCD risk-behaviours in the prison environment and towards a peer-led intervention to modify prisoners' NCD risk-behaviours. Additionally, their views towards suitable data collection tools to measure the NCD risk-behaviours of prisoners during the

phase two study were investigated. Following this qualitative work, the results from the analysis were used to develop an appropriate peer-led intervention to modify prisoners' NCD risk-behaviours and to identify a suitable approach to measuring NCD risk-behaviours during the phase two study. The quantitative phase two feasibility study then explored the feasibility of implementing the peer-led intervention in the prison environment and of undertaking the study procedures that would be utilised in a future definitive trial.

The use of such a design in which the qualitative component was undertaken first, primarily to inform the development of an intervention to be used in a later experimental trial, is illustrated in a set of related studies undertaken by Inciardi et al. (2007) and Martin et al. (2008). These studies were concerned with the development of, and subsequent evaluation of, a peer-led intervention to reduce HIV/BBV risk-behaviours among prisoners leaving custody in the USA. Inciardi et al. (2007) firstly undertook 11 qualitative focus groups with participants who were demographically reflective of the sample to be recruited in the main experimental trial. These focus groups explored the contextual factors pertaining to HIV risk-behaviours for those re-entering communities from custody, the findings of which were then used to inform the content of a peer-led digital versatile disc (DVD) HIV/BBV risk-reduction intervention to be delivered to prisoners in custody. Following the development of the intervention through this important qualitative work, Martin et al. (2008) went on to explore the effectiveness of the peer-led intervention that was developed through an experimental randomised controlled trial, the results of which were discussed in the preceding Literature Review Chapter.

It is acknowledged that some qualitative academics have been critical of the use of mixed methods approaches where qualitative enquiry is used in addition to quantitative experimental studies, such as in this PhD study, suggesting that in these instances, qualitative enquiry can often take a subsidiary role behind the perceived more important quantitative experimental aspect (Howe, 2004). Other authors, such as Creswell et al. (2006), have counter-argued this stance, suggesting that rather than just providing an auxiliary role, qualitative enquiry can play a major role in mixed methods studies, with in many cases the qualitative component afforded equal importance to the quantitative study. Indeed, this

equal importance placed on each of the components is evident in the fact that many mixed methods studies subsequently publish the findings of each type of enquiry separately, with each perceived as important enough to warrant their own stand-alone publication (Creswell et al., 2006). For instance, in the development and subsequent evaluation of the HIV/BBV risk-reduction peer-led intervention for prisoners discussed earlier, the extensive and important qualitative development work to design the intervention was published separately (Inciardi et al., 2007) to that of the actual quantitative evaluation of the intervention (Martin et al., 2008).

However, this is not always the case, with some mixed methods studies, particularly those where the qualitative component has been implemented in addition to an experimental quantitative study, indeed appearing to relegate qualitative enquiry to subsidiary status. For example, Lewin et al. (2009), in their systematic review of 30 mixed method experimental design studies, found that many of these types of studies inadequately reported aspects pertaining to the qualitative enquiry component, placing much more emphasis on the quantitative experimental component. For this PhD study, both the phase one qualitative study and the phase two quantitative study were afforded equal importance. The following two sections of this chapter present the specific qualitative and quantitative approaches that were used respectively during the phase one and phase two studies.

3.3 The use of generic qualitative enquiry for phase one

The rationale for utilising qualitative enquiry to explore stakeholder views during phase one to gather data to develop an appropriate peer-led intervention was provided in section 3.2.3. This section of the chapter presents the rationale for why a generic approach to qualitative enquiry was used to explore key stakeholder views.

Numerous qualitative approaches exist that may be used by researchers in the conduct of their qualitative enquiry. When deciding upon an appropriate approach to use, it is advised that researchers consider carefully the question(s) the research is seeking to answer, and the type of knowledge they wish to generate (Holloway and Todres, 2003). Some of the key qualitative approaches often

referred to in the qualitative methodology literature include ethnography, grounded theory, phenomenology, narrative enquiry and case study research (Creswell, 2014; Holloway and Wheeler, 2010), with the former three arguably the most well established and utilised approaches to qualitative research (Kahlke, 2014). Each of these different established qualitative approaches are based on specific methodological frameworks with certain philosophical assumptions (Kahlke, 2014; Sandelowski, 2000). For instance, grounded theory focusses on the development of substantive theory that is based on the data that has been generated by the research, with theoretical sampling a key feature of this type of research (Merriam, 2009); phenomenology focusses on the exploration of the underlying essence of phenomena, usually through in-depth and unstructured interviews with individuals (Cooper and Endacott, 2007); while ethnography places a high degree of importance on exploring phenomena in the context of culture, with observations a key method in this approach (Merriam, 2009).

However, due to the specific methodological and philosophical features of these established qualitative approaches, their applicability may be limited (Cooper and Endacott, 2007). For instance, not all research may be concerned with the generation of substantive theory (grounded theory), or with exploring the role of culture in the explanation of a phenomenon (ethnography). Indeed, this was the case with the current PhD study, with phase one not intending to generate theory (grounded theory), explore the role of culture (ethnography) or explore in-depth the underlying essence of one particular phenomenon (phenomenology). Often when qualitative research does not fit within well-established qualitative approaches, researchers take a generic approach to their enquiry, also sometimes referred to as basic qualitative enquiry or qualitative description (Caelli et al., 2003).

Merriam (1988) defines this generic qualitative enquiry as one that seeks “to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved” (p.11). It is suggested to be the least interpretative form of qualitative enquiry (Sandelowski, 2000), staying close to the rich description contained in participants accounts of the phenomenon under investigation, presenting the findings in language easily understood by both professionals and non-professionals (Sullivan-Bolyai et al., 2005). The generic

approach to qualitative enquiry has been advocated as the one that is most amenable to addressing research questions that are applied and practice focussed (Cooper and Endacott, 2007; Sandelowski, 2000). Given the applied focus of phase one, and because the research questions did not align with the methodological features of other established qualitative approaches, a generic qualitative approach was deemed to be the most suitable to explore the views and perceptions of prisoner and staff participants during the phase one study. The particular data collection and analysis methods that were used throughout this generic qualitative enquiry are provided in the following phase one methods chapter.

3.4 The use of experimental quantitative enquiry for phase two

The rationale for utilising quantitative enquiry to explore the feasibility of undertaking a full-scale definitive randomised controlled trial was provided earlier in this chapter in section 3.2.3. This section of the chapter presents and justifies the particular quantitative design that was used during the phase two study to address the feasibility objectives.

As critically discussed in the Literature Review Chapter, there is a distinct lack of evidence about the effectiveness of peer-led interventions to reduce NCD risk-behaviours among prisoners, thus leading the researcher to conclude that research should be undertaken to address this gap in the literature. The experimental research design is usually regarded as the most suitable in exploring the impact of health interventions, with the randomised controlled trial in particular advocated as the gold standard in generating research evidence upon which healthcare decisions should be based (Polgar and Thomas, 2013; Walker, 2005). In the randomised controlled design, the participants recruited into a study are randomly allocated either to the experimental group which receives the intervention being investigated, or a control group that does not receive the intervention. It is this random allocation to study groups that is suggested to reduce the potential for bias, as such a process helps to ensure that any confounding factors that may influence the outcome variable being explored are equally distributed among the study groups (Eccles et al., 2003; Sousa et al., 2007). Thus, when comparing the outcome variable among the study groups

following delivery of the intervention to the experimental group, it can be confidently assumed that any differences between the groups are as a result of the intervention being investigated, as opposed to any confounding factors (Eccles et al., 2003).

For this reason, a future definitive trial exploring the effectiveness of a peer-led intervention aiming to modify the NCD risk-behaviours of prisoners would employ a randomised controlled experimental design. Although this phase two study was one of feasibility as opposed to actually exploring the effectiveness of a peer-led intervention in modifying the NCD risk-behaviours of prisoners, it was deemed imperative that a randomised controlled experimental design be adopted for phase two of the research to adequately explore some of the key feasibility objectives. Randomisation of participants to intervention and control arms was required in order to assess whether or not the process of randomisation was acceptable to participants. For instance, had numerous potential participants refused to participate as a result of the randomisation process, or significantly more control participants withdrawn over the follow-up periods than intervention participants, then it would be clear that randomisation acceptability, or lack of it thereof, would need to be considered and mitigated in a future definitive trial. Indeed, for such reasons, authors have suggested that pilot and feasibility studies should mirror the design of the main trial as much as possible (Thabane et al., 2010), with many feasibility studies exploring health interventions indeed adopting randomised controlled designs (see for example; Harris et al., 2015; O'Donnell et al., 2015; Samaan et al., 2015; Watson et al., 2015). The specific randomised controlled experimental design utilised is discussed further in the phase two methods chapter presented later in this thesis (see Chapter 7).

3.5 Chapter summary

This chapter has justified the use of a mixed methods methodological approach to address the overarching aim of this PhD thesis. Justification for the use of a generic qualitative approach for the phase one study and an experimental randomised controlled trial for the phase two study has also been presented. The following two chapters present the methods and results of the phase one study respectively.

Chapter 4 Phase One Methods

4.1 Introduction

As stated in the previous Methodology Chapter, this PhD study adopted a mixed-methods approach to enquiry consisting of a phase one qualitative study and a phase two quantitative study. The main aim of the phase one qualitative study was to gather evidence to inform the development of an appropriate peer-led intervention to modify the NCD risk-behaviours of prisoners, through a generic approach to qualitative enquiry. The specific aims and objectives of phase one were as follows;

- To explore key stakeholders views towards the NCD risk-behaviours in the prison environment
- To explore key stakeholders views towards peer-led initiatives, specifically towards a peer-led scheme to reduce the NCD risk-behaviours of prisoners
- To identify any implementation considerations pertinent to the delivery of a peer-led intervention to modify prisoners NCD risk-behaviours in the prison environment

This chapter is dedicated to presenting the methods that were used in this phase one qualitative study. The chapter begins by providing a description of the two prison sites that acted as the setting for the phase one study, including information regarding the security category of each prison and its operational capacity. The chapter then presents the ethical approvals that were obtained in order to undertake the study, along with the key ethical considerations which informed decisions pertaining to the conduct of the study. The remainder of the chapter presents a detailed discussion of the research methods used to collect and analyse the data. The chapter concludes by presenting the key strategies that were employed to ensure the rigour and trustworthiness of the research.

4.2 Study setting

The initial intention was to conduct this research in a number of different prisons to reflect the different types of prison establishment in England and Wales; i.e. male and female establishments, adult and young offender institutes, and establishments of different security category. To do this, at the advice of the National Offender Management Service (NOMS), the highest level of security clearance was sought to enable the researcher access to the range of different types of prison establishments within England and Wales. However, lengthy delays were experienced in waiting for this clearance to be approved and, in view of this, a pragmatic decision was made to limit the research sites to those prisons where the researcher already had security clearance for access. It is conceivable that involving participants from other types of establishments may have provided different insights, with this discussed further in the final Discussion Chapter.

Phase one of the research took place in two male prisons in the North of England; Prison A and Prison B. Prison A is a Category B local remand prison, accepting male adults from Courts within the local region. It has an operational capacity of approximately 1,200 places. Category B prisons are classified as establishments for prisoners who do not require the highest levels of security, but for whom escape should be made extremely difficult (Ministry of Justice, 2011). Prison A has six different prison wings; four of these wings are dedicated to serving specific purposes and the other two are classified as ‘general’ wings. The specialist wings consist of the vulnerable prisoner wing, the resettlement wing, the drug recovery wing and the wing for remand prisoners only. The two general wings are classified as normal location wings. Prisoners at Prison A usually reside in a two-person cell, however, a small minority are held in single-person cells.

Prison B is a Category C training and resettlement prison, accepting sentenced adult male prisoners with any length of sentence, except those serving life sentences. It has an operational capacity of approximately 800 places. Category C prison establishments are classified as being for those prisoners who cannot be trusted in open conditions, but are unlikely to attempt a determined escape (Ministry of Justice, 2011). There are ten prison wings at Prison B, and the majority of the cells are single-person cells, however, there are a small number

of two-person cells also. Six of the prison wings are classified as normal location wings, and four of the wings serve specialist purposes which are as follows; the reception and induction wing, the substance misuse service wing, the drug free wing and an older persons/vulnerable prisoners wing.

4.3 Ethics

4.3.1 The ethical approvals process

Approval to conduct phase one of the research was granted by the NHS Research Ethics Committee (REC) and by the NOMS National Research Committee (NRC) (see Appendix 1 and 2 respectively). Approval was also granted by the Research and Development (R&D) manager of the NHS healthcare organisation responsible for providing the healthcare services at each of the two sites. Following these approvals, permissions from the governing Governor at Prison A and Prison B were obtained, as such is a mandatory requirement in addition to NOMS NRC approval in order to undertake research at a specific prison site.

4.3.2 Ethical considerations

There were a number of ethical considerations which needed to be addressed given the unique setting of the research; the prison. One of these considerations related to the principle of voluntariness and the right of prisoners to choose whether or not to participate in research. As acknowledged by Charles et al. (2014), questions have been raised with regards to the capacity of prisoners to provide informed consent to participate in research, as the very nature of imprisonment negatively impacts upon prisoner liberty and autonomy, and as such may interfere with the process of prisoners providing voluntary consent to take part in research (Lerner, 2007; Charles et al., 2014). In order to ensure that prisoners in the current study were aware of the voluntary nature of participation, and did not feel pressured or coerced into participating in the research, a number of safeguards were put in place. The prisoner participant information sheet (see Appendix 3) made it explicitly clear to participants that it was entirely their choice whether or not they decided to participate in the study, and that non-participation, or withdrawal, would in no way affect their legal rights or the services they

received from the healthcare department. This point was also verbally reiterated to the prisoner participants upon their meeting with the researcher, and then again immediately prior to them providing consent to participate in the data collection process.

The decision was also taken that the initial contact with the potential prisoner participants would not be made by the researcher, but instead by the prisoner healthcare representatives, details of which are described later in this chapter in the recruitment section. This step was taken as it was felt that initial contact being made by the researcher may have increased the likelihood of potential participants feeling pressurised to participate in the research study, due to potential power imbalances between the researcher and the prisoners (King and Liebling, 2008), particularly given that the researcher is a recognised member of staff at the two prison sites.

A second consideration related to developing participant information sheets that would be easily understood by the prisoners. The literacy and numeracy difficulties faced by prisoners in the UK has been well documented over the years, with recent statistics highlighting that large proportions of prisoners have the literacy and numeracy skills equivalent to that of an 11-year old child (Prisoners Education Trust, 2015). To mitigate against these literacy difficulties, the researcher worked in collaboration with a prisoner patient group at each of the two prison sites to develop documents that could be easily understood. This collaboration entailed the researcher presenting drafts of the information sheets and consent forms to the groups; the groups then advised the researcher with regards to simplifying the language, sentence structure and grammar. The finalised documents, amended in light of the groups' comments, were then checked by another group of prisoners who assessed the documents for readability. The decision was also made to verbally go through the information contained in the participant information sheets with potential participants, to mitigate against circumstances where participants may have been illiterate and thus would have experienced difficulties understanding this written information.

A final consideration included ensuring the safety of all those involved in the research, including the research participants and the researcher (Roberts, 2007; Caulfield and Hill, 2014). Levels of violence in prisons in England and Wales are

high, with statistics from the 2013-14 HMIP Report highlighting that the number of assaults reported in adult male prisons has been steadily increasing since 2005-06, with the number of recorded assaults in 2013-14 at 9,867 (HMIP, 2014). Moreover, the number of serious assaults were reported to be the highest on record in 2013-14, with 1,351 of the assaults recorded during this period graded as serious (HMIP, 2014).

In light of these statistics, precise safety precautions were followed for the prisoner focus group discussions. Firstly, those prisoners deemed as a high-risk of violence to either members of staff or other prisoners were excluded from the focus group discussions. Secondly, during the group discussions, a colleague of the researcher was enlisted to sit in on the discussion so as to ensure that the researcher was not alone when conducting the focus groups with the prisoner participants. Throughout each of the prisoner focus groups, the researcher's colleague sat closest to the door and in close proximity to a general alarm so that they could raise the alarm should any incidents have occurred. An appropriate venue was also chosen for each focus group discussion; one that provided the necessary privacy and confidentiality to conduct the focus group, while also being clearly visible to and easily accessed by prison officers should the general alarm have been raised. Finally, after each prisoner focus group, the researcher conducted a debrief meeting with their colleague and a member of the supervisory team to discuss any problems, including safety issues, encountered during the focus groups. No such concerns were raised during any of the focus groups.

4.4 Data collection methods

This section discusses the choice of the particular qualitative data collection methods chosen to elicit data from participants. The rationale for the use of focus groups with prisoner participants is presented first, followed by the rationale for the utilisation of one-to-one interviews with the staff participants. The purpose of the focus groups and individual interviews was to elicit data from participants to inform the development of a peer-led intervention to modify the NCD risk-behaviours of prisoners, namely through exploring the following; the views of participants towards the NCD risk-behaviours in the prison environment,

participants views towards peer-led interventions, and specifically their thoughts on the development of a peer-led intervention to modify NCD risk-behaviours among prisoners.

4.4.1 Rationale for focus groups with prisoners

Two of the most common approaches to data collection in qualitative healthcare research include the individual interview method and the focus group method (Gill et al., 2008; Roberts and Priest, 2010), and each of these methods would have been suitable to elicit data from prisoner participants to achieve the aims of the first phase of the research. However, the focus group method was deemed to be the most appropriate, as it has clear advantages when undertaking research with vulnerable and marginalised groups (Liamputtong, 2011; Pollack, 2003; Hesse-Biber and Leavy, 2010). One such advantage is that the focus group setting provides a 'non-threatening' and safe environment in which similar members of the marginalised group can share their ideas and experiences amongst the group without fear of being criticised (Krueger, 1994; Owen, 2001), and therefore ideas and experiences may be shared which may not have necessarily been disclosed in a one-to-one interview with just the researcher.

A second and crucially important advantage of the focus group method in research involving vulnerable populations is its ability to mitigate against the potential power imbalance between the researcher and the researched (Liamputtong, 2011; Plugge et al., 2008), with power imbalance in research involving prisoners particularly prominent as the very nature of imprisonment is concerned with control and authority (King and Liebling, 2008). Focus groups can help to redress this power imbalance, as generally speaking, the discussions are guided by the interactions and talk among the participant group members, rather than between the researcher and the group members, and thus the researcher possesses less control and power over the discussion than they would in an individual interview situation. This shift in power over the discussion is advantageous, as it can maximise the range of perspectives, experiences and opinions shared by the group which are not imposed by the researcher (Fitzpatrick and Boulton, 1994; Owen, 2001; Sirdifield, 2006).

The vulnerability of the participant population was not the only deciding factor in the selection of the focus group method, as pragmatic factors were also influential in guiding the selection of this method. Both focus group and individual interview methods had been considered as potential methods of data collection with the prisoner participants, and consideration of the impact of each on the prison regime played an important role in deciding which method was the most suitable. This is because the more the research interfered with the normal running of the prison regime, the more likely it would have been that approval to conduct the research would have been rejected by NOMS NRC and the governors at each site.

With regards to the demands placed upon prison staff, each of these methods would have inevitably impacted upon staff time, as prison members of staff would have been diverted from their normal duties in order to facilitate the individual interviews or focus groups with prisoners (i.e. unlocking prisoners to attend the interviews/focus groups, escorting prisoners to and from the venue, and overseeing the process for safety purposes). The individual interview method was deemed to be much more demanding on staff time than focus groups, as more individual interviews would have been needed, compared to focus groups, to ensure that a range of experiences and opinions from a variety of different prisoners were elicited. Focus groups enable researchers to explore a range of ideas and perspectives among a group of participants simultaneously (Kitzinger, 1995), and therefore place less burden on staff time. As limited impact upon prison regime and staff resources was pivotal in the process of obtaining approval to conduct the research, the focus group method was deemed to be the most suitable method for obtaining the required data while keeping demand upon staff resources at a minimum.

4.4.2 Rationale for individual interviews with members of staff

As was the case for prisoner participants, both focus group and individual interview methods were considered as potential methods to collect data from staff participants. The literature concerning the undertaking of qualitative research in organisational settings advises caution when conducting focus groups in workplace settings with staff participants who know and are familiar with each other (Barbour, 1999; Finch et al., 2014; Krueger and Casey, 2009). This is

because, although there is a level of familiarity between staff members, the organisational climate may inhibit open communication, and could even discourage the sharing of views and opinions, particularly in cases where the group of staff participants are quite heterogeneous with different roles and responsibilities (Kreuger and Casey, 2009).

This is particularly pertinent to this research, as the participants consisted of both prison and healthcare staff, each of which have conflicting priorities. The focus of the former is very much concerned with order and control, where as the primary responsibility of healthcare staff is to provide quality patient care to prisoners, with much less of a focus on custodial functions (McIntosh and Saville, 2006). Not only were the staff participants heterogeneous in terms of their role and functions, they also differed in terms of levels of seniority. As will be discussed further in the sampling section of this chapter, the staff participants the researcher aimed to recruit consisted of a range of staff members of differing grades, from members of the senior management team to members of staff of lower grades. Conducting focus groups consisting of staff members of these differing levels of seniority could have potentially facilitated the creation of a focus group discussion plagued by power differentials, whereby the staff members of lower grades may have felt intimidated to voice their views and opinions in the presence of their more senior colleagues (Krueger and Casey, 2009). In cases such as this where the staff members are unavoidably heterogenous, the individual interview method is more appropriate to elicit data from participants than the focus group method.

The decision to utilise individual interviews over focus groups was also informed by pragmatic considerations which needed to be taken into account in light of the staffing situation at each of the prison research sites. The researcher was aware that the majority of prisons in England and Wales had experienced a dramatic drop in numbers of prison staff in recent years, primarily as a result of the benchmarking process whereby efficiency savings were being made through changes to the prison regime and the staffing complement of the Prison Service (House of Commons Justice Committee, 2015). This was true for the two prison research sites, with the Howard League for Penal Reform documenting a significant loss in prison officer grades at each of the two sites between 2010 and 2013 (The Howard League for Penal Reform, 2014).

Such a decrease in prison staff can have a huge impact upon prison-based research, and what methods can realistically be undertaken in a prison environment. For example, in a very recent prison-based research project undertaken by Ludlow (2015), the author documented the difficulty in conducting focus groups with members of staff within the prison. The author highlighted that such a difficulty arose as the staff profile at the prison had been reduced significantly, thereby resulting in a scenario in which staff members could not be taken away from their work areas at the same time to participate in the focus group discussion. Given that the two prison research sites had similarly experienced a dramatic decrease in the staff profile, this was deemed to be a significant factor negating the use of focus groups with the staff member participants.

For the theoretical and pragmatic decisions discussed above, the individual interview method was adopted as opposed to the focus group method to elicit data from the staff participants. Further details regarding the sampling and recruitment of the staff participants to the interviews, and of the prisoners to the focus groups, are provided in later sections of this chapter.

4.4.3 The approach taken for the focus groups and interviews

The approach taken to interview individuals or groups in qualitative research can vary in structure, with the two main approaches to qualitative interview being the unstructured interview and the semi-structured interview (Bryman, 2001; Gill et al., 2008; Holloway and Wheeler, 2010). As indicated by its title, unstructured interviewing has very little structure, with these types of interview often only involving the interviewer asking a very generic question at the beginning of the interview, with the rest of the interview guided by the response of participants (Bryman, 2001; Gill et al., 2008). Due to the lack of pre-defined questioning and focus, with the discussion being guided primarily by the responses of participants, these types of interview are at risk of being dominated by discussion that is of no or little relevance to the research questions a study is aiming to explore (Holloway and Wheeler, 2010). In contrast, semi-structured interviews are slightly more structured in their approach, usually utilising a topic guide with key topics to be explored with participants during the discussion (Bryman, 2001). Topic guides are usually used flexibly with participants, with the flow of the interview discussion

being guided by participants responses, with the guide there to ensure that the main topics are covered with participants (Holloway and Wheeler, 2010). The use of the topic guide in semi-structured interviewing is advantageous, as it ensures that the key topics are explored with participants and thus that relevant data is collected to answer the specific research questions of the project (Holloway and Wheeler, 2010). With the above in mind, and as the research aimed to explore very specific topics with participants, the decision was taken to utilise a semi-structured approach to the focus group and individual interviews, with each guided by a specific topic guide developed by the researcher. The development of the topic guide for the prisoner focus groups and individual staff interviews, and how they were used, is discussed in later relevant sections of this chapter.

4.5 Sample size

Determination of an appropriate sample size for qualitative research is more difficult than it is for quantitative research, as there is no gold standard governing the determination of a suitable sample size (Baker and Edwards, 2012; Hardon et al., 2004). Instead of being guided by pre-determined and powered sample sizes, samples in qualitative research studies are generally guided by the concept of 'data saturation', with participant recruitment halted once such saturation is reached (Guest et al., 2006; Bryman, 2012). This concept of data saturation refers to the point at which no new relevant information or themes emerge in the data collected from participants (Morse, 1995). Data saturation guided the size of the sample for this first phase of the research, as the aim was to recruit prisoners and staff members to the focus groups and interviews respectively, up until the point that no new codes or themes were being generated from the focus group and interview data.

The literature pertaining to sample sizes in qualitative research generally advise that between 5 and 20 participants may be sufficient to reach saturation (Kuzel, 1999), with suggestions for individual interview studies ranging between 6 to 20 interviews, and general rules of thumb for focus groups being to conduct 3 to 5 focus groups (Holloway and Wheeler, 2010; Krueger and Casey, 2009), with 6 to 10 participants in each group discussion (Hardon et al., 2004; Krueger and Casey, 2009). Based upon this, it was anticipated that approximately 14 staff

interviews and 4 focus groups with prisoners would be required to reach data saturation. When undertaking this phase one data collection, data saturation was apparent after all 3 of the prisoner focus groups and 10 of the staff interviews had been undertaken, with no novel codes emerging from the focus group and interview data at this point. However, the researcher did undertake a further two staff interviews to ensure that saturation had indeed been reached. Therefore, in total, 12 interviews with members of staff and 3 focus groups with prisoners were conducted. Details pertaining to the composition of the focus groups and interviews are presented in the Phase One Results Chapter, while the following two sections of this chapter details how the participants were sampled and recruited.

4.6 Sampling

The selection of an appropriate sampling strategy is equally as key for qualitative research as it is for quantitative research (Wilmot, 2005; Robinson, 2014). As acknowledged by Marshall (1996), quantitative research studies tend to employ random probability sampling strategies, resulting in representative samples of the population under study being selected, so that the results of the research study can be generalised back to the whole population. Such random probability sampling strategies are inappropriate to use in qualitative research studies (Ritchie et al., 2014; Krueger and Casey, 2009), as rather than aiming to obtain results which can be generalised to whole populations, qualitative studies instead aim to gain an in-depth understanding of the phenomenon under investigation (Holloway and Wheeler, 2010; Wilmot, 2005), generally using much smaller sample sizes (Ploeg, 1999). By and large, most qualitative research studies employ purposive sampling strategies in which units of study (e.g. individuals, communities, organisations) are selected to participate based upon their suitability to answer the research questions (Patton, 1990; Teddlie and Yu, 2007). The selection of an appropriate sampling strategy for the prisoner focus groups and staff interviews, and justifications for the selection of the strategies employed, are presented in turn below in the following two sub-sections.

4.6.1 Prisoner focus group sampling strategy

The decision was made to employ the maximum variation purposive sampling strategy to sample participants for the prisoner focus groups, a strategy which involves identifying specific criteria which vary amongst the participants being investigated, and then selecting participants that differ from each other based on this identified criterion (Creswell, 2013). The advantages of such an approach are that it allows for the exploration of the differences in perspectives of these varied participants (Creswell, 2013), while also crucially uncovering central themes and experiences which cut across the participant group as a whole (Patton, 1990). Given that the intention of this first phase of the research was to gather data to inform the development of a peer-led intervention that would appeal to the majority of prisoners, rather than specific cohorts of prisoners, the maximum variation sampling method was employed.

The sampling strategy aimed to ensure that there was representation from each of the prison wings, and that a range of ages and ethnic backgrounds were represented. Potential participants who had volunteered to participate in the focus groups were selected based on these three main factors. At Prison A, 16 prisoners volunteered to participate. Six of these were from the vulnerable prisoners wing, with all of these participants subsequently selected to take part; the vulnerable prisoner participants required their own focus group discussion due to the need for them to be kept segregated from the mainstream prison population at all times. Of the 10 volunteers from the mainstream population, only one was from a non-White ethnic background and was thus selected to take part. Of the remaining nine participants, who were all White, five were selected to participate on the basis of their age and wing. The four who were not selected to participate were not selected as their ages and wings were already represented by the nine participants that had been selected to take part. In these instances, priority for selection was on a first come first serve basis, whereby those who expressed their interest in participating at an earlier date were selected over those expressing their interest at a later date.

At Prison B, 11 participants volunteered to participate. Three of these were from non-White ethnic backgrounds and were thus selected to participate. Of the remaining eight participants, who were all White, four of these were selected to

participate on the basis of age and wing. As was the case for Prison A, the four who were not selected to participate were not selected as their ages and wings were already represented by those selected to participate in the focus groups. Given that data saturation was the guiding principle of how many focus groups would be conducted, the potential participants not initially selected at both prisons (four each) to participate in the focus group discussions were informed that they would be contacted by the researcher to inform them that either sufficient data had been collected and a further focus group would not be required, or to seek their participation in another focus group.

The researcher does acknowledge that it is sometimes recommended to conduct separate focus group discussions with participants according to criteria that they vary on (i.e. conducting separate focus groups for; older versus younger participants, male versus female participants, and for participants belonging to different ethnic categories) (Fitzpatrick and Boulton, 1994; Mertens and Wilson, 2012). This is based on the premise that too much heterogeneity between focus group members can lead to the inhibition of some members expressing their views in the presence of different others (Fitzpatrick and Boulton, 1994; Mertens and Wilson, 2012).

Other than for the vulnerable prisoners, who for security reasons required their own focus group, the researcher did not feel that the focus groups for this study needed to be stratified according to participants' age, ethnicity and wing. This is because the prisoners participating in the focus groups were deemed to be highly homogenous due to their similarity on a number of other dimensions (e.g. male, prisoners, primarily from the local region, primarily from socially excluded backgrounds etc.), only differing on aspects such as age, ethnicity and which prison wing they resided on. Thus, it was felt that non-stratification would not lead to a situation whereby the prisoner participants were so different that the group would be classified as being too heterogenous.

Indeed, it is often recommended in the literature to ensure that there is some variation in the demographic characteristics of participants within focus groups, to allow contrasting opinions to be brought to the fore and thus generate meaningful discussion (Krueger and Casey, 2009; Finch and Lewis, 2003). It must also be acknowledged that it would have been highly difficult to stratify the

groups based on participants' socio-demographic characteristics, due to the small numbers volunteering their participation at the outset. For instance, only one potential participant from a non-White ethnic background volunteered their participation at Prison A, meaning it would have been impossible to conduct focus groups stratified based on ethnicity. Further details regarding the composition of the prisoner participants participating in each of the three focus groups are presented in the Phase One Results Chapter.

4.6.2 Staff interview sampling strategy

The maximum variation purposive sampling strategy was chosen and utilised to sample for the one-to-one interviews with members of staff also. In each of the two prisons, the staff comprise of a large cohort of prison custodial staff employed by Her Majesty's Prison Service (HMPS), and a large healthcare team employed by the NHS. It is important to acknowledge here that the primary function of these two cohorts of staff are very different. The principal function of the prison custodial staff is on maintaining order and control within the establishment, with custodial functions their priority (McIntosh and Saville, 2006; House of Commons Justice Committee, 2009). In contrast, the main function of the healthcare team is to provide high quality patient care to prisoners, equivalent as possible to the care that is provided to individuals in community settings (NHS England, 2016a). Order and control play much less of a role in the duties of healthcare staff (McIntosh and Saville, 2006). Furthermore, the staff within each of these two cohorts are highly varied, with the staff profiles comprising of a range of positions of seniority, with different roles, responsibilities, training and experience at each level.

In order to ensure that the views and opinions of the range of staff within these two cohorts were explored, the researcher purposefully selected staff members of differing positions of seniority within each cohort to invite to participate in the one-to-one staff interviews. The staff member roles invited to interview at each of the two prison sites included; the Prison Deputy Governor, Senior Prison Officer(s), Prison Officer(s), the Head of Healthcare, Primary Care Nurse(s) and Healthcare Assistant(s). However, at Prison A, none of the Healthcare Assistants or the Head of Healthcare were able to participate due to time and workload pressures, and as such, the Deputy Manager and a Pharmacy Technician were invited to participate instead. Further details regarding the characteristics of the

staff member participants interviewed are provided in the Phase One Results Chapter.

4.7 Recruitment

4.7.1 Recruitment to the prisoner focus groups

Prisoners were eligible to take part in the prisoner focus groups if they met the following criteria;

- 21 years or older. This is because those under the age of 21 are classified as young offenders and are usually held in young offender institutions. Only in exceptional circumstances are young offenders held in establishments classified for adult prisoners
- Possessed the mental capacity necessary to provide full informed consent

However, they were ineligible if they met any of the following;

- Under the age of 21, for reasons discussed above
- Lacked the mental capacity to provide full informed consent
- Deemed a high-security risk on their prisoner record due to safety reasons

To recruit participants into the prisoner focus groups, healthcare representatives on each of the prison wings at Prison A and Prison B distributed the participant information sheets to their fellow peers on the wings (see Appendix 3). To provide context, healthcare representatives are current serving prisoners whose role includes acting as a liaison between prisoners and healthcare staff, helping design health service delivery in prison, and providing health information and support to other prisoners (Chapman-Gibbs et al., 2011). The primary rationale behind the decision to utilise the healthcare representatives in the dissemination of the research information was to reduce potential perceived coercion to participate in the study, a point discussed at the beginning of this chapter. However, a second rationale informing this decision was that healthcare representatives at each of the two prison sites have been invaluable in disseminating relevant health information to their peers since their implementation in 2008, including the dissemination of information regarding research projects being undertaken in the prisons. As such, the researcher

perceived the utilisation of healthcare representatives as a viable and successful method for disseminating the study information to their prisoner peers.

The participant information sheet disseminated by the healthcare representatives gave potential participants a detailed explanation of why the study was being conducted, why they had been asked to take part and what the study would involve for them. The information sheet instructed those potential participants who were interested in participating in the focus group discussions to submit an application to meet with the researcher. Potential participants who had expressed an interest in participating were then seen by the researcher who discussed the information provided in the participant information sheet verbally. It was felt necessary to verbally discuss the information provided in the information sheets due to the literacy difficulties many prisoners face, which was discussed earlier in this chapter. Potential participants were advised to take at least 24 hours to reflect upon the participant information before deciding whether or not they wished to take part in the study.

Sixteen potential participants at Prison A, and 11 potential participants at Prison B expressed a willingness to participate in the focus group discussions after reflecting upon the participant information; all of these potential participants were deemed eligible in light of the inclusion/exclusion criteria outlined at the beginning of this sub-section. As mentioned in the sampling section, participants were selected to participate in the focus group discussions based upon their socio-demographic criteria (age, ethnicity and prison wing) to ensure a variety of different prisoners were involved in the group discussions. This resulted in six participants being selected to take part in each of the two focus groups at Prison A, and seven participants being selected to take part in the focus group at Prison B. A mutually convenient time to conduct the focus groups was arranged with the prisoner participants. At both prisons, not all of the prisoners selected to take part in the focus groups arrived on the day of the focus group. This meant that the final number of participants that took part in the focus groups were as follows; for Prison A, each of the two focus groups comprised of five participants each, and at Prison B, six participants took part in the focus group discussion. Further details regarding the conduct of the focus groups is provided later in this chapter.

4.7.2 Recruitment to the staff interviews

The researcher approached the appropriate members of prison and healthcare and provided them with a written participant information sheet (see Appendix 4) and a brief verbal explanation of the study. These members of staff were advised to take at least 24 hours to reflect upon the participant information before deciding whether or not they wished to participate in the research. Members of staff who decided to participate in the research were instructed to telephone the researcher on their prison extension phone number, to inform them of their willingness to take part. As mentioned in the sampling section above, the Head of Healthcare and Healthcare Assistants at Prison A contacted the researcher and advised that they were unable to take part due to workload and time pressures. During these discussions, these members of staff advised on other members of staff who they felt would be appropriate to interview instead (i.e. the Deputy Manager and a Pharmacy Technician with experience in providing smoking cessation services within the prison). Following their advice, the researcher contacted these alternative members of staff and followed the procedure outlined above. For those staff members that expressed a willingness to participate, a mutually convenient time to undertake the interview was arranged; more details pertaining to the undertaking of the staff interviews is provided later in this chapter.

4.8 The conduct of the prisoner focus groups

4.8.1 Developing a topic guide to be used

A topic guide consisting of open-ended questions was developed by the researcher to guide each of the focus group discussions (see Appendix 5). The questions within the topic guide were informed by findings from the literature review and were designed to elicit responses that would answer the key aims and objectives of the phase one study. The key areas covered by the topic guide were as follows; participants' experiences of the three NCD risk-behaviours in the prison environment, aspects of the prison environment that already support or could be implemented to support participants live a healthier lifestyle in prison, their views towards peer-led interventions, and specifically their thoughts on a peer-led intervention to modify NCD risk-behaviours among prisoners.

Prior to undertaking the focus groups with participants, the topic guide was tested during a pilot focus group with three prisoners. This pilot exercise lasted approximately an hour and a half. Upon completion of the pilot focus group discussion, the pilot participants reported that they found the discussion to be an enjoyable and informative experience, and commented the length of time taken to complete the discussion was acceptable. In light of the pilot exercise, slight revisions were made to the topic guide which mostly pertained to adding prompts and probes where it felt like the discussion could have been elaborated. For example, when talking about what an appropriate peer-led intervention might look like, none of the pilot participants mentioned during the discussion what the format of the intervention should take, and thus it was unclear what their preference would have been for the format of delivery. As such, a note was added to probe regarding format if participants were not forthcoming about this in the focus group discussions.

4.8.2 Arranging the focus groups

The researcher had agreed with their colleague that the colleague would sit in on the focus groups to take notes in case participants refused for the group discussion to be audio-recorded, and also to mitigate against circumstances in which the quality of the audio-recording of the group discussion was poor. As discussed in the ethics section of this chapter, having another staff member present at the focus groups was also deemed a necessary security precaution. Dates were agreed with the researcher colleague and the prisoner participants for the timing of the focus groups. It was important when arranging the prisoner focus groups, to ensure that the group discussions were not arranged at a time when the participants had other appointments scheduled (e.g. healthcare appointments, family/legal visits, court appearances etc.), as this could have impacted upon focus group attendance. A venue for each focus group discussion was booked that provided the necessary confidentiality, but was also visible and easily accessible to prison officers should anything have gone wrong during the group discussions. The participants were sent a reminder of the date and venue of the focus groups the day before the focus group discussions were due to take place.

4.8.3 Provision of information and obtaining consent

For each focus group discussion, the following procedures were followed. Once participants arrived at the venue of the focus group, prior to commencing the focus group discussion, the researcher gave each of the participants a copy of the participant information sheet. Although this information had been discussed with participants already during the recruitment period, the researcher verbally ran through each section contained in the participant information sheet again, and gave participants the opportunity to ask any questions they may have had about the research. During this process, it was made clear to participants that participating in the study was entirely voluntary, and withdrawal from the group discussion could be made at any point. It was also emphasised to participants that if they disclosed any information relating to illegal acts, or behaviour that could result in harm to themselves or others, then such information would need to be shared with the appropriate agencies (e.g. the security department and/or mental health team).

The importance of keeping confidential the content of the focus group discussions was also explained. The reasoning behind audio-recording the group discussions was explained, and at this point participants were informed that they could refuse to be recorded if they so wished. If any participants refused to be audio-recorded, then the researcher would have relied upon the notes taken of the discussion by their colleague. However, none of the participants in any of the focus groups refused to be audio-recorded, and thus each discussion was recorded using a digital audio recorder. After going through the information contained in the information sheet, all participants were asked if they were still wanting to participate in the research, to which all participants replied that they did. Participants were then given two copies of the informed consent form (see Appendix 6). The researcher verbally read out each of the points in the consent form, and instructed participants to enter their initials into the box if they agreed with each statement. Participants were then asked to sign the consent form, which was also signed by the researcher. One copy of the consent form was kept by the participant, and the second copy of the form was kept by the researcher.

4.8.4 Undertaking the focus groups

The prisoner focus groups took place between August 2015 and March 2016. In total, three focus groups were conducted; two in Prison A and one in Prison B. Five participants took part in each of the two focus groups at Prison A, and six participants took part in the focus group at Prison B. At Prison A, participants were escorted from their prison wing to the focus group venue by a prison officer, while at Prison B, participants made their own way to the venue on line route. The focus groups lasted approximately one and a half hours (range: 1 hour and 21 minutes to 1 hour and 51 minutes) and all were conducted in a private group room within the prison establishment. For each focus group discussion, the room was set-up so that the participants and the researcher were sat in a circle, with the audio-recorder placed in the middle of the group circle on a table. The researcher's colleague, who was taking notes of the group discussion, was sat away from the circle so as to not distract participants from the focus group discussion. The colleague sat nearest to the door and the general alarm so that the alarm could be raised and prison staff easily alerted should any security issues have arisen during the group discussions.

All of the focus groups were conducted by the same researcher with the same colleague taking notes to ensure consistency across each of the focus groups. The start of the focus group discussion consisted of the researcher asking a couple of ice-breaker questions of participants, such as their age, which wing they were from, their smoking status and their length of time spent in prison. These straightforward and simple questions were asked at the very beginning with the intention of calming any nerves the participants may have had, easing them gently into the group discussion (Creswell, 2014). The remainder of the focus group discussion was guided by the topic guide developed by the researcher.

The topic guide was used in a flexible manner to ensure that the group discussion flowed naturally, and to allow for participants to raise relevant issues pertinent to the research questions that had not been anticipated when developing the guide (Powell and Single, 1996). Throughout each of the focus group discussions, equal participation from all of the group members was encouraged to mitigate against the discussion being dominated by certain members of the focus group. At the end of the focus group discussion, participants were asked if there was

anything that they would like to share that had not been covered in the preceding discussion, and participants were given the opportunity to ask any questions they may have had about the research. Following this, participants were thanked for their participation in the research, and reminded they could request to see the researcher at a later date if they had any further queries.

4.8.5 After the focus groups

Immediately following each focus group discussion, the researcher and note-taker colleague discussed their reflections on the group discussion and recorded these reflections. The following in particular were noted; participants' engagement throughout the focus group, how well the topic guide had worked and whether slight refinements were required, whether or not participants experienced difficulties in answering any of the questions, and initial thoughts on themes emerging from the group discussions. The researcher also went through the notes recorded by the note-taker, which had primarily focussed on capturing the key points raised by participants during the focus group discussion, adding to the notes where they thought the note-taker had missed anything important. The recording of such field-notes is pivotal in qualitative research (Arthur et al., 2014; Krueger and Casey, 2009), both to supplement the audio-recording of the focus group discussion, and to mitigate against the potential of the audio-recording failing to record the discussion. In addition, the researcher listened back over the audio-recording of each focus group, noting down ideas around initial codes and potential themes, while also highlighting areas requiring further exploration in the subsequent focus groups with prisoners and interviews with staff.

4.9 The conduct of the staff interviews

4.9.1 Developing a topic guide to be used

A topic guide consisting of open-ended questions was developed by the researcher to guide each of the interviews with the staff participants (see Appendix 7). The topic guide was again designed to elicit responses that would answer the key aims and objectives of this first phase of the study, with findings from the literature review informing the questions asked. The key areas the topic guide explored were as follows; participants' views towards prisoner engagement

with each of the three NCD risk-behaviours, aspects of the prison environment that already support or could be implemented to support prisoners live a healthier lifestyle in prison, their views towards peer-led interventions, and specifically their thoughts on a peer-led intervention to modify NCD risk-behaviours among prisoners.

Following development of the topic guide, and prior to conducting the interviews with staff participants, the topic guide was tested during two pilot interviews with members of staff – one healthcare member of staff and one prison member of staff. Each of these pilot interviews lasted for approximately one hour. These members of staff commented at the end that they felt the time taken to complete the interview was reasonable, and that they felt comfortable discussing the topics discussed with the researcher. During this exercise, two topics were brought up by the pilot interviewees that had not been anticipated by the researcher in the initial development of the topic guide; the first was that one pilot interviewee expressed concern regarding whether or not it would be feasible to have one intervention addressing all three NCD risk-behaviours, and the second area was both pilot interviewees discussed the impending introduction of the smoking ban with regards to what may help prisoners live healthier lifestyles in prison. Regarding this latter point, the researcher was not aware at the time that a specific date had been set for the introduction of a smoking ban in all prisons across England and Wales. In light of these topics being raised by the pilot interviewees, and their potential relevance to the development of an intervention to reduce NCD risk-behaviours, the topic guide was revised slightly, adding probes to discuss these topics with staff participants if they were not brought up naturally by the participants themselves during the interview discussions.

4.9.2 Arranging the interviews

The interviews with each of the staff participants were organised at the point at which the staff member had contacted the researcher to inform them that they wished to take part in the research. As the staff participants had very busy workloads, the researcher was flexible with the timings of the interviews and scheduled them for a time most convenient to the staff member in question. For two of the interviewees, the interview had to be re-scheduled three times due to unforeseen circumstances. All of the interviews were scheduled to take place

within an appropriate room within the prison, and for all of the interviews this was a quiet office space near to the participant's area of work in the prison. The participants were sent a reminder of the date and venue of the interview the day before the interview was due to take place.

4.9.3 Provision of information and obtaining consent

The researcher met with the participants on the agreed time and date at the location requested by each of the participants. Prior to commencing each of the interviews, participants were provided with the participant information sheet which had been previously given to them during the recruitment process. The information contained in the information sheet was verbally discussed with participants, highlighting that participation was voluntary and that participants could withdraw or refuse to answer any questions they did not want to answer. The reasoning behind audio-recording the interviews was discussed, and it was explained to participants that they could refuse to be audio-recorded if they so wished; however, none of the staff participants refused to be audio-recorded. At this point, it was explained to the staff participants that the interviews would be transcribed verbatim and that participants would be given the opportunity to read through these transcripts before any results from this phase of the research would be formally reported. This step was taken as it was a mandatory requirement of the NHS REC before they would grant approval for the research to commence. Participants also had the opportunity to ask questions about the research. On confirming that they still wished to take part in the research, participants were given two copies of the informed consent form (see Appendix 8). The form instructed participants to place their initials in each of the boxes if they agreed with the statements, and required a signature from the participant and the researcher at the end of the form. One copy of the signed consent form was kept by the participant and the second copy was kept by the researcher.

4.9.4 Conducting the interviews

The staff interviews took place between August 2015 and March 2016, with 12 interviews conducted in total. The length of the staff interviews ranged from 50 minutes to 1 hour and 45 minutes, and all were conducted in a private and quiet office space within the prison establishment. All of the staff interviews were

conducted by the same researcher, and for each interview, the venue was set-up so that the participant was sat opposite the researcher, with the audio-recorder placed on a table which was next to them both. The interviews were conducted using an open-ended topic guide, the content of which was discussed earlier in this section. As recommended in the qualitative research design literature, the interview began with a couple of ice-breaker questions to make the participant feel comfortable and ease them into the interview gently (Arthur et al., 2014; Creswell, 2014). These ice-breaker questions consisted of what the participant's role was, how long they had worked in prison for, and if they had worked at any other prisons before. Following these ice-breaker questions, the researcher moved on to the main focus of the interview, asking participants the key questions within the topic guide.

As with the prisoner focus groups, the topic guide utilised to guide the staff interviews was used flexibly, so as to allow participants to raise topics that had not been anticipated when developing the topic guide, and to ensure that the interview discussion had a natural flow. This flexible use of the topic guide meant that not all of the areas in the guide were covered in the same depth with each participant, as the interview discussion was very much informed by the participant's own opinions and experiences relevant to the research questions. At the close of the interview, participants were asked if they had anything to add that had not been covered in the main interview discussion, and the participant was given the opportunity to query any questions they had. The researcher informed the participants that they would contact them once the interview had been transcribed to allow them to check over the transcripts. The participant was then thanked for their participation.

4.9.5 After the interviews

Immediately after each interview had finished, and after the participant had left the room, the researcher wrote down field notes from the interview to complement the audio-recording. These field notes comprised a summary of the interview discussion, the flow of the discussion, how well the topic guide had worked, including whether slight revisions were necessary, and key themes emerging from the interview. The researcher also listened back over the audio-recording of each of the interviews, noting down ideas around initial codes and potential

themes, while also highlighting areas requiring further exploration in the subsequent staff interviews and focus groups with prisoners.

4.10 Data management

After each of the interviews and focus groups, the audio recording was transferred from the digital recorder to a password protected University of Leeds server, with the original recording deleted from the recorder. The audio recordings of the focus groups and interviews were transcribed verbatim using the Microsoft Office Word package. The researcher transcribed the first two interviews with staff participants, however, due to time constraints, an administrator colleague of the researcher with significant transcribing experience transcribed the remaining 10 staff interviews. A professional transcriber transcribed each of the three prisoner focus groups. Each of the completed transcriptions of the focus groups and interviews not undertaken by the researcher were checked by the researcher against the audio-recordings to check for accuracy and quality. During this exercise, the researcher did not identify any issues with the quality of the transcriptions. The only significant accuracy issue identified was in relation to the prisoner focus groups, where the professional transcriber had used the term ‘PIT workers’ as opposed to ‘PID workers’, and all instances where such occurred were corrected by the researcher.

The transcriptions of the one-to-one staff interviews were checked by the specific member of staff as this was a stipulation of the NHS REC. None of the staff participants requested for any of their data to be omitted from reports and summaries of the research findings. Once each transcription had been re-checked for accuracy and quality, the audio-recording was deleted from the University of Leeds server as such was a stipulation of NOMS NRC, who deemed the recordings to be potentially ‘disclosive’. The transcriptions were saved electronically on a password protected University of Leeds server, with printed copies of the transcriptions kept in a fireproof locked filing cabinet within the research office. The participants were given a unique participant number and were referred to by this number so that potential identification of data by anyone other than the researcher was not possible. Names of others mentioned by participants during the focus groups and interviews were also removed during the

transcription process to preserve confidentiality and anonymity. The signed prisoner and staff consent forms were kept in a separate fireproof locked filing cabinet within the research office.

4.11 Data analysis

4.11.1 Rationale for the use of thematic analysis

The aim of qualitative analysis is to make sense of the large amount of data collected, identifying patterns and themes within the data, and then conveying these through a well-constructed findings section of a research report (Patton, 1990). Although there are numerous methods available for analysing qualitative data, it is most often suggested that researchers should choose the most appropriate method of analysis for meeting the aims and objectives of a specific research project (Braun and Clarke, 2006).

The method of analysis chosen to analyse the qualitative focus group and interview data for this first phase of the research was the thematic analysis method outlined in the highly cited paper of Braun and Clarke (2006). This form of analysis has been used extensively across different disciplines, including health research, and offers a systematic method of identifying, analysing and reporting patterns and themes within data (Braun and Clarke, 2006; Braun and Clarke, 2014).

Thematic analysis was chosen as it is a particularly appropriate method to use for those researchers conducting more applied research where there is a focus on utilising findings for a very specific purpose (Braun and Clarke, 2014), which this research was aiming to do through gathering very specific data to inform the development of an appropriate and acceptable peer-led intervention to modify NCD risk-behaviours among prisoners. It is also a method particularly suitable for research exploring the views and opinions of different types of participants, allowing for similarities and differences in the perspectives of these different participants to be identified (King, 2004; Braun and Clarke, 2006), which again is appropriate to the current research. Finally, it is a method that is relatively easy to learn and undertake, particularly when compared to other more technical and theoretically bound methods of analysis, such as grounded theory and

interpretive phenomenological analysis (Braun and Clarke, 2014), and is therefore suited to those researchers in the early stages of their qualitative career. It is also an appropriate form of analysis for qualitative research taking a generic approach to enquiry (Lim, 2011).

4.11.2 Undertaking the thematic analysis

The thematic analysis of the qualitative data collected throughout phase one followed the six systematic stages outlined by Braun and Clarke (2006). These stages are not intended to be followed in a unidirectional linear fashion whereby the analyst moves from stage to stage, but instead are intended to be worked through iteratively, with the researcher moving back and forth between stages (Braun and Clarke, 2006). Thus this was the process undertaken throughout the conduct of this phase one study. The remainder of this section describes each of the six thematic analytical stages undertaken, with the aim of such being to demonstrate the transparency of the method used and thus the academic integrity of the findings and conclusions drawn from the analysis (Patton, 1990; Kuper et al., 2008).

4.11.2.1 Stage one – familiarisation with the data

The first step in the analysis is for the researcher to become familiar with the data collected through immersing themselves in the data, with the aim of such being to gain an understanding of the depth of content and breadth of coverage. The undertaking of this step commenced at the very beginning of the data collection process, with the researcher listening back to each of the audio-recordings of the focus groups and interviews immediately after each one of these had been conducted. During this process, the researcher noted down initial ideas pertaining to potential patterns in the data, and areas which required further exploration in subsequent focus groups and interviews with participants. Along with listening back to the audio-recordings, the researcher further enhanced their familiarity with the data through continuous reading and re-reading of each focus group and interview transcript, with again initial ideas regarding potential patterns and discrepancies noted.

4.11.2.2 Stage two – generating initial codes

The second step of the thematic analysis involved initial coding of the data collected, whereby meaningful labels (i.e. words) were assigned to segments of the raw data from the interview and focus group transcripts, which encapsulated the main focus of interest of the researcher. As advised by Braun and Clarke (2006), when undertaking the coding for this study, the researcher systematically worked through each of the focus group and interview transcripts, giving full and equal attention to each transcript, and each segment of data within each transcript. An example of the coding process is provided in Figure 4-1, in an extract where a staff member participant is discussing the context of the three NCD risk-behaviours in the prison environment.

Figure 4-1: Example of the initial coding process

Smoking is rife[1], everybody smokes, it's very rare anybody comes in and says they don't smoke to be honest[2], and they continue to smoke when they get in[3]. We have loads of problems with tobacco from a healthcare point of view[4] because prisoners are cutting up to get emergency tobacco packs[5]. Exercise is probably quite good because most people are gym mad[6], but then that's more about bulking up and building muscle than it is about generally keeping fit[7]	[1]Smoking rife [2]Non-smokers rare [3]Continue smoking on entry [4]Tobacco problems [5]"Cutting up" [6]"Gym mad" [7]Bulking up > general fitness

The coding process was undertaken manually whereby hand-written codes were noted on printed versions of the transcripts. The researcher did consider using a computer software programme, such as NVivo, to assist the coding process, however, this was dismissed as it was felt the necessary intimacy and immersion with the analytical process may have been lost through the use of computer software (Holloway and Wheeler, 2010). Following coding of each of the transcripts, codes and their relevant corresponding extracts were entered into a Microsoft Word document where all codes were stored and saved electronically. The same or similar codes from different transcripts were collated into tables and stored in separate Microsoft Word documents (see Appendix 9 for an example of this).

As will be discussed in the final section of this chapter, to ensure the rigour of the coding process, a portion of the interview and focus group transcripts were independently coded by one of the researcher's supervisors to check for inter-coder reliability. This was undertaken through comparing the initial codes generated by the researcher and those of the supervisor; see section 4.12.1 of this chapter for further details regarding the inter-coder reliability.

4.11.2.3 Stage three – searching for themes

Following the generation of initial codes, the researcher moved on to the next stage which involved exploring patterns between the codes devised. During this process, the researcher analysed the codes and the relevant extracts supporting each code, exploring whether or not codes could potentially be combined to form themes. An example of this search for patterns between codes is described in the following. In the discussions around diet, numerous codes were generated pertaining to negative perceptions of the diet, such as 'diet unhealthy', 'diet stodgy', 'small portion sizes', 'food gone off' and 'vegetables boiled to death'. Given that each of these codes related to negative perceptions around the diet being poor, these codes were combined to form a potential theme relating to a poor diet being provided to prisoners. Throughout this process exploring for patterns within the data, the researcher actively sought out dissenting cases that contradicted the patterns and themes appearing to be apparent in the data, the rationale for which is provided in the following section pertaining to building rigour into the research study.

As advocated by Braun and Clarke (2006), mind maps were developed during this stage to aid the researcher in sorting codes into potential themes, and identifying where there may be relationships between these potential themes (an example mind-map is presented in Appendix 10). By the end of this stage, a number of candidate themes and sub-themes had been identified for further review.

4.11.2.4 Stage four – reviewing themes

Following the development of candidate themes and sub-themes, these were reviewed by the researcher following the processes outlined by Braun and Clarke (2006). Firstly, the researcher examined the extracts contained within each

candidate theme and sub-theme to ensure that they formed a coherent pattern in terms of the story they were telling about the data. The themes and sub-themes were then checked against the entire data-set to ensure that they accurately represented the data-set as a whole.

When reviewing the candidate themes and subthemes, it was evident that some of the themes were similar and would benefit from being merged to form over-arching themes. For example, the themes pertaining to the prison environment not being conducive to smoking cessation, healthy eating and optimal levels of physical activity were so closely aligned, that it felt appropriate to merge these together to form one overarching theme around the prison environment not being conducive to living a healthy lifestyle. In addition, it was also felt that some themes would have formed more coherent patterns if further separated out into subthemes. For example, during stage three, the researcher had generated a candidate theme pertaining to limiting factors to support prisoners live a healthier lifestyle in prison; following the review, this theme was separated into two: 1) the financial constraints and 2) the staffing level constraints, to be more specific around the distinct barriers prison and healthcare face in supporting prisoners live healthier lifestyles while in custody.

Upon completing this review, the researcher had generated a number of over-arching themes containing the themes and sub-themes. One of the researcher's supervisor's reviewed these themes and cross-checked them against the transcripts to ensure that they also felt the final thematic structure developed by the researcher accurately represented the data collected from participants; this exercise revealed that there was good agreement.

4.11.2.5 Stage five – defining and naming themes

Upon review of the themes generated, appropriate names were assigned to the themes which aimed to accurately capture the essence of what each theme was trying to tell the reader of this thesis. Names were assigned that were felt to be punchy, concise and able to immediately convey to the reader the essence of each theme. Once themes had been operationally defined and named, these were checked by the researcher's supervision team, who suggested slight edits to the names of some of the themes to make them even more concise.

4.11.2.6 Stage six – producing the report

The final stage involved writing the results of the thematic analysis undertaken. The following chapter presents the results of this analysis, with each of the themes generated discussed in detail and accompanied by verbatim quotes from participants to support the researcher's decision making process in the generation of each theme.

4.12 Building rigour and trust-worthiness into the study

The evaluation and critique of any research study is crucial to ensuring sound, safe and evidence-based findings are implemented in practice (Long and Johnson, 2000; Noble and Smith, 2015). However, historically, qualitative research studies have been criticised for lacking scientific rigour, with claims that they lack transparency, with the findings merely consisting of a narrative account reflecting the researcher's own thoughts and opinions (Noble and Smith, 2015). As acknowledged by Mays and Pope (1995), some of these criticisms have arisen due to a lack of explicit reporting of the methods and procedures used in qualitative studies, and can be effectively remedied by building integrity into the research process.

In order to build rigour and integrity into this phase one study, a number of steps were taken based upon Lincoln and Guba's (1985, as cited in Holloway and Wheeler, 2010) suggestions for assessing the quality of qualitative research. Lincoln and Guba (1985, as cited in Holloway and Wheeler, 2010) posited that evaluation of the 'trustworthiness' (scientific rigour) of qualitative research be based on the four following criteria; credibility, transferability, dependability and confirmability. Moreover, methodological strategies can be built in to research studies to ensure that they meet these criteria (Noble and Smith, 2015). The remainder of this section discusses each of the four criteria in turn, presenting the different methodological strategies implemented to enhance the trustworthiness and scientific integrity of this phase one study.

4.12.1 Credibility

The notion of credibility refers to the compatibility between the researcher's findings regarding participants' views and experiences, and actual reality

(Holloway and Wheeler, 2010). Methods to enhance credibility include triangulation, negative case analysis, member checking and peer-debriefing (Krefting, 1990). To enhance the credibility of this study, a number of these methodological strategies were incorporated into the design of the research. Firstly, the researcher incorporated triangulation into the design by aiming to sample and subsequently recruiting both prisoners and members of staff to the focus groups and interviews respectively, to explore their views and perceptions on the topics of interest. This form of triangulation is referred to as perspective triangulation (Patton, 1990), and is advantageous as the generation of themes based on convergent perspectives from different sets of participants, which this study did, can be claimed as adding to the credibility of the findings (Creswell, 2014).

Secondly, when conducting the qualitative analysis, particular attention was paid to searching for negative/dissenting cases that did not fit with the patterns and themes identified, as such is important in ensuring that the interpretations gleaned are the most accurate and plausible in light of the data collected (Holloway and Wheeler, 2010). Moreover, the perspectives of individuals in everyday life are not always congruent, and thus it is unlikely that a research study exploring the perspectives of a number of individuals will lead to an account where all participants are in agreement with each other (Creswell, 2014). As such, Creswell (2014) recommends that dissenting cases that contradict the themes of a study should be presented in a qualitative results section to ensure a more realistic and credible account of the overall findings. For this reason, the researcher ensured that the resultant findings section of this thesis was explicitly clear where there were dissenting cases, and where appropriate, provided potential reasons for such contradictions.

A final credibility strategy implemented into the design of the research was a form of peer-debriefing during the analytic process, a process whereby an experienced and skilled qualitative researcher checks the emerging patterns and themes generated by a researcher, to ensure that they are in fact being driven by the data, and not any preconceptions of the researcher (Holloway and Wheeler, 2010; Noble and Smith, 2015). As described in the preceding data analysis section, two forms of peer-debriefing were incorporated into the data analysis

process. The first of these was a check of the initial coding process undertaken by the researcher. During this process, one of the researcher's supervisors, highly experienced in the undertaking of qualitative research, coded two of the transcripts, and following this, the researcher's coding was compared with that of the supervisor to check for inter-coder agreement. Overall, the agreement between the coding was very good, with only slight deviations in some of the names assigned to a small portion of codes. The second form of peer-debriefing involved reviewing of the themes generated by the researcher. Following the development and refining of themes by the researcher, a second member of the researcher's supervisory team, also skilled in the undertaking of qualitative research, checked the themes against the transcripts to ensure that they were reflecting the accounts of participants as opposed to any biases of the researcher. Again, the supervisor agreed with the themes that had been generated.

4.12.2 Transferability

This concept is very similar to that of generalisability in quantitative research and concerns the ability to transfer qualitative findings from one context to another that is similar, whether that be similar participants, or a similar environmental context (Holloway and Wheeler, 2010). It is suggested in the literature that researchers undertaking a particular study provide highly detailed accounts of the study setting, methods utilised, participant composition and the findings generated, to enable others to make judgements regarding whether or not the findings of a study are applicable to their own setting (Krefting, 1990). Moreover, through providing such rich and thick a description of one's own research, researchers can enhance the transparency and credibility of their research (Creswell, 2014). To enable others to assess the transferability of the findings of this phase one study, and to be as transparent as possible, the researcher has provided a thick detailed description of the study setting, sampling strategy utilised, data collection methods used, analytical procedures followed and the findings generated.

4.12.3 Dependability

This component posits that the findings of a qualitative research project should be consistent and accurate (Holloway and Wheeler, 2010). The main method by

which dependability of findings can be demonstrated is through keeping a detailed audit trail of decisions made throughout the research project, and providing a rationale for such decisions, as such can help to indicate whether or not a specific study and its findings may be repeatable (Krefting, 1990). To promote dependability in this phase one study, the researcher has been explicitly clear about decisions made pertaining to data collection and analysis methods chosen throughout this chapter, with rationale for such decisions also provided.

4.12.4 Confirmability

Confirmability refers to the concept that the qualitative findings generated and presented by a researcher should represent the views and experiences of the participants under study, as opposed to reflecting the researcher's own beliefs, assumptions or biases (Morrow, 2005; Holloway and Wheeler, 2010). Again, the main methodological strategy in ensuring confirmability is through providing a clear and detailed audit trail of the decisions made throughout the research project, particularly with regards to the themes and interpretations made in light of the data collected from participants (Holloway and Wheeler, 2010). To enhance the confirmability of the findings from this phase one study, the researcher has provided a detailed discussion of the themes generated from the accounts of participants, which are presented in the following Phase One Results Chapter. Moreover, the themes generated are accompanied by verbatim quotes from participants, to enable the reader to judge for themselves whether or not the themes accurately reflect the views and experiences of the participants under study.

4.13 Reflexivity

A reflexive diary noting the conduct of the phase one focus groups and interviews was also kept, with such reflexive notes capturing aspects such as the researcher's own skill as an interviewer, instances where it seemed that the responses of participants may have been influenced by the researcher's status as a member of staff and instances in which the researcher could have approached the qualitative work differently. This section of the chapter discusses these reflexive notes. Regarding the researcher's skill as an interviewer, there

was an instance in one of the prisoner focus groups where the participants were discussing an issue that was of no relevance to the research topic under investigation, but was something that was clearly important to the participants. At the time, the researcher was well aware that the discussion had veered off track, but almost felt intimidated to interrupt the group discussion due to its clear importance to participants, which thus did delay the researcher in guiding the discussion back on track. This was frustrating, as it ultimately meant that some of the questions towards the latter end of the focus group discussion were not discussed as in-depth as was hoped, as the focus group needed to end at a specific time to enable the prison officer to escort the group participants back to their wing. This was a key learning point for the researcher though, with the researcher more aware of and confident in keeping the subsequent focus groups (and staff interviews) more focussed in light of time pressures.

For some of the staff interviews, as many knew that the researcher was a member of staff at the sites, and had been for a number of years, there were times when it came across that they held prior assumptions about the researcher's knowledge on topics that they were discussing. For instance, they made reference to the researcher 'knowing what it's like' in their discussion of particular topics. In order to mitigate against this assumption of prior knowledge, and the potential for participants not to discuss these in as much depth due to this assumption, the researcher followed up with probes in instances where this did occur, to encourage participants to elaborate on their points, and so ensuring they were discussed in enough depth to identify important themes in the data.

Through conducting the qualitative interviews and focus groups with participants, the researcher felt that a good understanding of the NCD risk-behaviours in the prison environment had been obtained, and the key factors pertinent to behaviour change had been identified, both of which were key to the development of a peer-led intervention to modify prisoners' NCD risk-behaviours, and which are discussed in subsequent chapters of this thesis. However, the researcher does acknowledge that had a different approach been taken with regards to the development of the topic guide, the exploration of stakeholder views may have led to a more in-depth theoretical understanding of NCD risk-behaviour change in the prison setting.

In this phase one study, the topic guide utilised was not informed by a theoretical framework, but instead developed based upon the findings of previous literature conducted in the area. Other researchers and intervention designers have taken a different approach to exploring factors pertinent to behaviour change, using theoretical frameworks, such as the Theoretical Domains Framework (TDF) developed by Michie et al. (2005), to inform topic guides to explore the key barriers and facilitators to behaviour change in particular contexts (Haith-Cooper et al., 2018; Alexander et al., 2014). The TDF in particular has been advocated as a useful framework for exploring the key factors pertinent to individual behaviour change, as it is suggested to encourage intervention designers to consider the many different influences on behaviour, such as cognition, affect, social factors and environmental influences (Atkins et al., 2017). For this reason, numerous researchers have used the TDF as the main basis of their topic guides to explore stakeholder views regarding behaviour change to gain an in-depth theoretical understanding of behaviour and thus what might help to modify behaviour (for example see Haith-Cooper et al., 2018; Alexander et al., 2014; Kirk et al., 2016).

The primary reason behind why the TDF was not used in the current phase one study to inform the topic guide exploring stakeholder views on the barriers and facilitators to NCD risk-behaviour change among prisoners was because the researcher did not come across the TDF until after the phase one study had been completed. Had the researcher been aware of this behavioural theoretical framework prior to conducting the study, it would have been utilised to explore both prisoners' and staff members' views towards NCD risk-behaviour change in the prison environment. Based upon the benefits of using the TDF to gain a greater understanding of behaviour and the factors that influence behaviour change, it is a recommendation that future studies exploring barriers and facilitators to behaviour change in the prison environment utilise the TDF as the basis for such exploration. This is discussed further in the final discussion chapter.

4.14 Chapter summary

To summarise, this chapter has presented the particular sampling, recruitment, data collection and data analysis methods chosen to conduct the phase one qualitative study. To be as transparent as possible about the decision making process in the conduct of this phase one study, clear and explicit rationales for the methods chosen and procedures undertaken have also been provided. In so doing, the researcher aims to enhance the rigour and trustworthiness of the study and its findings, and to enable the reader of this thesis to make decisions regarding the credibility, transferability, dependability and confirmability of the study's findings. The following chapter is dedicated to presenting the findings from the thematic analysis performed on the phase one data.

Chapter 5 Phase One Results

5.1 Introduction

This chapter presents the results from the qualitative focus groups with prisoners and one-to-one interviews with members of prison and healthcare staff. To reiterate, the main aim of this phase was to explore key stakeholder views regarding the context of the NCD risk-behaviours in the prison environment, and towards a peer-led intervention to modify NCD risk-behaviours among prisoners, so that an appropriate peer-led intervention could be developed. The chapter begins with a description of the prisoner and staff participants that participated in the focus groups and interviews respectively. The results of the analysis are then presented in two sections. The first section (sections 5.3 to 5.11) presents participants' generic views towards the topics under investigation, which are specified above. The remainder of the chapter (section 5.12) then presents a synthesis of the very specific suggestions related to the design of the intervention, such as its proposed content, format and length of delivery.

5.2 Participant characteristics

5.2.1 Prisoner participants

Three focus groups were conducted with prisoner participants, two at Prison A and one at Prison B. In total, 16 participants took part in the prisoner focus groups. The characteristics of the prisoner participants are displayed in Table 5-1. The age of participants ranged from 21 to 72 years of age, and the majority described themselves as being of White British origin (13). Twelve of the participants described themselves as currently smoking cigarettes, three had previously smoked cigarettes but had stopped smoking during their time in prison, and one participant described themselves as never having smoked cigarettes.

5.2.2 Staff participants

Twelve interviews were conducted with members of staff, six at Prison A and six at Prison B. Table 5-2 displays the characteristics of the staff participants interviewed. As discussed in the previous chapter, staff of differing grades and seniority were interviewed in order to explore a range of perspectives. However, in Table 5-2, and throughout the remainder of this chapter, staff are only differentiated according to whether they were prison or healthcare members of staff rather than by their specific role. This was to preserve the anonymity of the staff members interviewed. An equal number of prison and healthcare staff were interviewed at each site. The length of time participants had worked at the prison sites varied considerably, with the shortest period being one month, and the longest 24 years.

Table 5-1: Summary of prisoner participant characteristics

Focus group number	Prison	Age	Ethnicity
1	Prison A	38	White British
1	Prison A	22	White British
1	Prison A	72	White British
1	Prison A	25	White British
1	Prison A	38	White British
2	Prison B	27	White British
2	Prison B	21	Asian British
2	Prison B	22	White British
2	Prison B	28	Asian British
2	Prison B	38	White British
2	Prison B	28	White British
3	Prison A	34	White British
3	Prison A	25	Mixed Black/White Caribbean
3	Prison A	40	White British
3	Prison A	27	White British
3	Prison A	42	White British

Table 5-2: Summary of staff participant characteristics

Participant ID	Prison	Type of staff member	Length of time spent working at prison
1	Prison A	Healthcare	24 years
2	Prison A	Prison	2 years
3	Prison A	Prison	22 years
4	Prison A	Prison	16 years
5	Prison A	Healthcare	15 years
6	Prison A	Healthcare	7 years
7	Prison B	Prison	1 month
8	Prison B	Prison	20 years
9	Prison B	Healthcare	1 year
10	Prison B	Healthcare	10 months
11	Prison B	Prison	13 years
12	Prison B	Healthcare	7 years

5.3 Structure of the findings relating to participants generic views towards the topics under exploration

Through thematic analysis of the focus group and interview data, the researcher generated eight overarching themes which were as follows;

- Non-conducive prison environment
- Scepticism
- Positive views towards prison peer-led interventions
- Peer-led interventions in prison – the downfalls
- Success dependent on peer
- Managing risks
- Prison regime impact
- Increasing staff buy-in

These overarching themes were developed through clustering similar sub-themes and themes together to develop the over-arching theme. Table 5-3 summarises the clustering of the initial sub-themes and themes in relation to the over-arching themes. A detailed description of each over-arching theme and its relevant themes and sub-themes are then presented. Links between the different themes are also identified. All themes presented are accompanied by direct quotations from participants to support the themes generated by the researcher; these quotations are included in order to be transparent regarding the interpretations made by the researcher (Wu et al., 2016).

Table 5-3: Summary of over-arching themes, themes and sub-themes developed from the thematic qualitative analysis

Overarching theme	Themes with sub-themes
5.4 Non-conducive prison environment	5.4.1 Not conducive to smoking cessation 5.4.1.1 Smoking a coping mechanism 5.4.1.2 Smoking a habit 5.4.1.3 Unable to escape smokers 5.4.1.4 Limitations to services imposed by the prison 5.4.1.5 Demand for smoking cessation unmet
	5.4.2 Not conducive to healthy diet 5.4.2.1 Poor diet 5.4.2.2 Choice versus no choice 5.4.2.3 Diet leading to weight problems 5.4.2.4 Demand for healthy choices
	5.4.3 Not conducive to physical activity 5.4.3.1 Limited physical activity opportunities 5.4.3.2 Overcoming physical activity barriers

Table 5-3 continued: Summary of over-arching themes, themes and sub-themes developed from the qualitative analysis

Overarching theme	Themes with sub-themes
	5.4.3.3 Weights versus cardiovascular 5.4.3.4 More gymnasium time required
	5.4.4 Not just about prison – entrenched behaviours 5.4.4.1 Live unhealthily in the community 5.4.4.2 Lack of awareness
5.5 Scepticism	5.5.1 Capacity a limiting factor
	5.5.2 Finance a limiting factor
	5.5.3 Lack of supporting change impacting peer-led intervention
5.6 Positive views towards prison peer-led interventions	5.6.1 Positive schemes already exist
	5.6.2 Beneficial for the peer-workers

Table 5-3 continued: Summary of over-arching themes, themes and sub-themes developed from the qualitative analysis

Overarching theme	Themes with sub-themes
	5.6.3 Benefits versus staff-led interventions 5.6.3.1 Peers have a better understanding 5.6.3.2 More trust and honesty 5.6.3.3 Peers relatable 5.6.3.4 Peers not an authority figure 5.6.3.5 Peers easier to talk to 5.6.3.6 Peers more accessible and flexible
	5.6.4 Supportive of peer-led NCD risk-factor intervention
5.7 Peer-led interventions in prison – the downfalls	5.7.1 Resistance to hierarchy
	5.7.2 Peers working in the role for wrong reasons
	5.7.3 Problems with entirely peer-led

Table 5-3 continued: Summary of over-arching themes, themes and sub-themes developed from the qualitative analysis

Overarching theme	Themes with sub-themes
5.8 Success dependent on peer	5.8.1 Desirable attributes and qualities 5.8.1.1 Good role model 5.8.1.2 Experienced behaviour change 5.8.1.3 Educated/skilled 5.8.1.4 Aspires to help others 5.8.1.5 Strong and confident character 5.8.1.6 Trustworthy
	5.8.2 Barriers to finding the right peer 5.8.2.1 Turnover 5.8.2.2 Peers doing job for the wrong reasons 5.8.2.3 Finding peers with the necessary intellectual skills
	5.8.3 Enablers to support finding the right peer 5.8.3.1 Careful selection 5.8.3.2 Incentivising the role

Table 5-3 continued: Summary of over-arching themes, themes and sub-themes developed from the qualitative analysis

Overarching theme	Themes with sub-themes
5.9 Managing risks	5.9.1 Intervention open to abuse
	5.9.2 Assessment and monitoring
	5.9.3 Exclusions from participating
5.10 Prison regime impact	5.10.1 Venue
	5.10.2 Movement
	5.10.3 Lack of prison officers to supervise/oversee
	5.10.4 Competing priorities
5.11 Increasing staff buy-in	5.11.1 Lack of buy-in
	5.11.2 Selling the benefits

5.4 Non-conducive prison environment

This theme was epitomised by the barriers prisoners face in trying to lead a healthy lifestyle within prison. Participants talked extensively about smoking being viewed by prisoners as a valuable coping mechanism to deal with the many aspects of prison life they struggle to cope with, particularly with regards to boredom and stress. There was also a perception among participants that it is not easy for prisoners to eat healthily and undertake optimal levels of physical activity, with numerous references made to specific restrictions the prison environment imposes on prisoners' ability to make healthy diet choices and undertake a varied and healthy exercise regime.

5.4.1 Not conducive to smoking cessation

5.4.1.1 Smoking a coping mechanism

Smoking was discussed extensively by both the prisoner and staff participants as being a helpful tool for prisoners to cope with numerous aspects of prison life that many prisoners seem to struggle with. In particular, prisoners and staff consistently referred to how large proportions of prisoners smoke to deal with common stressful experiences encountered in prison, such as being away from loved ones and awaiting the outcome of court hearings.

> *"Smoking, with that, it's a stress reliever" [Prisoner focus group 1]*

> *"For some of them it really helps them, you know, it helps to keep them calm, it keeps them relaxed, it helps them cope with what's going on" [Interview 10 – healthcare staff member]*

Not only was smoking discussed by both sets of participants as being a coping mechanism to deal with stress, it was also perceived as being a tool to deal with the boredom and monotony of prison life. The prisoner participants especially described how they tended to smoke more cigarettes while they were locked behind their cell door overnight, as during this time there was a perception that there were very few activities that they could undertake.

> *"That's why a lot of people carry on smoking, don't they. Because of all the boredom" [Prisoner focus group 2]*

"You often hear them saying that they smoke more when they're banged up on a night because they're bored" [Interview 3 – prison staff member]

5.4.1.2 Smoking a habit

Some of the prisoners in the focus groups talked about how, for them, smoking behaviour had become part and parcel of their routine in prison, and thus they viewed smoking as more of a habitual behaviour than anything else.

"I've got a habit of every time there's a break, rolling a cig, or smoke half my cigarette and put it out" [Prisoner focus group 2]

"It's just a habit… if I don't have cigarettes it's not a problem" [Prisoner focus group 3]

The staff participants concurred with this prisoner viewpoint and discussed smoking in terms of habit and routines, and argued that to be successful in stopping smoking in prison, prisoners need to address and break this habitual behaviour.

"Give them some tools so that that habit is broken really, as well as them doing the stuff around smoking cessation. So you're coping with the addiction, but it's not just the addiction for me, I think it is just tackling that" [Interview 7 – prison staff member]

5.4.1.3 Unable to escape smokers

It was overtly evident from the prisoner focus groups that the constant exposure to other individuals smoking in the prison environment poses significant barriers to those prisoners that do want to cease their smoking behaviour. The prisoner participants described how the constant exposure to other prisoners smoking leads to enhanced cravings and urges, and thus can encourage prisoners to smoke. Indeed, one participant who had recently given up smoking within prison spoke of his difficulty stopping, as the prisoners occupying the cells either side of him continued to smoke.

"It's like both my next door neighbours, they both smoke. So when I'm in the middle, and I'm not smoking, and you haven't had a cig for time, it smells of smoke. And you're sat there thinking 'oh I could do with a smoke'. And I've been tempted to" [Prisoner focus group 2]

The prisoner participants suggested that there was little they could do to mitigate against this, as they are always exposed to other smokers in all areas of the prison, including their cells, on the wings, in workshops, in healthcare and on the

exercise yard. Some of the prisoner participants even referred to experiences where prison officers had smoked in front of them. The staff participants confirmed the difficulty in avoiding other smokers in prison, which was a particular source of contention for some of these staff members, given that the policy of the prison establishments dictate that prisoners are only able to smoke in their own cell and no-where else in the prison.

> *"You know we say to them, 'this is a hospital, it's a no smoking area, if you, if you continue to smoke then, you know, you're not going to get seen'" [Interview 1 – healthcare staff member]*

> *"Prisoners are walking around the jail smoking, unchallenged, in areas where they shouldn't be smoking" [Interview 8 – prison staff member]*

There was a perception among the staff participants that this inability to avoid smokers would continue to hamper the attempts of those prisoners trying to stop smoking, until environmental changes are implemented into prisons, such as smoke-free wings or a blanket smoking ban across the prison estate.

> *"At the moment, they're trying to give up smoking but they're going back to a smoking environment…so if you can put them on a wing where nobody is smoking then it's going to be a lot easier for them to, I think, get on with the hard task of giving up smoking" [Interview 8 – prison staff member]*

5.4.1.4 Limitations to services imposed by the prison

There were a small number of healthcare staff that participated in the staff interviews that had previously or were currently involved in the provision of smoking cessation services to prisoners at each of the two prison sites. These experienced members of staff talked about the specific limitations to smoking cessation services posed by the prison environment, and their frustrations at these. One of these frustrations was the limited smoking cessation medications that healthcare were able to provide in comparison to the smoking cessation medications available in the community, with such limitations due to security concerns around them. For example, they talked about inhalators, which are readily available in the community, being banned as a result of their potential to be abused as a means of drugs paraphernalia.

> *"You couldn't have gum because you're not allowed chewing gum in prison, you couldn't have inhalators, inhalators could be used as crack*

pipes… So these kind of things were available out in the community, but security won't allow them" [Interview 6 – healthcare staff member]

"We had a man that came in last night and he was on Nicorette gum and patches, but he wasn't allowed the gum…but for me, somebody's done the hard work, they've stopped, they're coming in, they're on it, it would be wrong to stop it" [Interview 5 – healthcare staff member]

Another difficult factor to contend with identified by the healthcare staff involved in the provision of smoking cessation was the limitations the prison environment poses in terms of prisoners being able to undertake different activities to distract them from smoking or to replace their smoking with. This was primarily discussed in terms of prisoners being stuck behind their cell door, which therefore limited their freedom and ability to undertake different activities that would normally be encouraged as distraction techniques out in the community.

"That isn't that easy when you're in a prison and you're stuck with the regime. You can't just, you don't have that freedom to change your routine" [Interview 10 – healthcare staff member]

One of the healthcare members of staff in particular talked about their experiences of discussing distraction techniques with prisoners, and highlighted that they found it very difficult to come up with ideas that prisoners would actually be able to enact within the prison.

"You need to be careful because you don't want to suggest things that they just can't do, you can't say 'when you're getting that craving just go for a little walk', because that's not an option for them" [Interview 6 – healthcare staff member]

5.4.1.5 Demand for smoking cessation unmet

Both prisoner and staff participants suggested there was a high demand for smoking cessation services within both prisons, with participants making reference to very lengthy waiting lists to access smoking cessation support at both sites. Through discussion of the prisoner participants experiences of trying to access smoking cessation support at the prisons, it was apparent that the prisoner participants felt that the waiting lists were far too long, and in some cases they described their applications to receive support not being acknowledged at all, which was a clear point of frustration. Two participants even described how they had resorted to illicitly buying smoking cessation medication from other prisoners to circumvent the lengthy waiting list.

"There's very limited, you know, resources to stop I think. And the ones that are, they're hard to get hold of. The waiting list is just too long" [Prisoner focus group 3]

"Participant 1: Even just getting that help and advice, and the nicotine patches, I've had to buy nicotine patches off lads on the wing when I wanted to try and stop smoking.

Researcher: Right.

Participant 2: I had to buy Champix. And I did them.

Researcher: How come you had to buy them?

Participant 2: Because that's the only way I could get them. I bought some off a lad on wing" [Prisoner focus group 2]

The long waiting lists to access smoking cessation support were perceived by some of the healthcare staff participants to be problematic, as they felt that prisoners' motivation to cease their smoking behaviour slowly diminished over the numerous weeks they were left waiting to receive support. Indeed, this may well be a viable concern, as one of the prisoner participants in the focus groups described how he refused smoking cessation support after initially requesting for help, as he was no longer motivated to stop smoking by the time the healthcare department were able to offer him support.

"I don't think that's easy to get to that point where they make that decision, and they want immediate support at that point, they don't want to be told that they're going to have to wait 20 weeks before they can get on a course, because then they're just going to be like 'ah no there's no point'" [Interview 10 – healthcare staff member]

"I declined it me, because it was pointless, because at that time I didn't want to stop smoking. I put in when I came in but then it took that long. But then eventually I thought I can't be bothered" [Prisoner focus group 2]

For the small number of prisoners that had received smoking cessation support in custody previously, these prisoners were very critical of the support provided, suggesting that the service was poorly organised. One of the main criticisms levelled at the service by these prisoners was the lack of consistency in the provision of smoking cessation medications. These prisoner participants made frequent reference to lengthy gaps in the provision of their course of medication, with such leading to relapses to smoking, and in some cases, as a result of relapse, removal from the smoking cessation course altogether. This lack of consistency was a clear source of contention for these prisoner participants who

emphasised the need for consistency. This frustration in the lack of consistency was not just expressed by the prisoner participants, but by the few members of healthcare staff participants involved in the provision of smoking cessation services also.

> *"Stopping and starting my prescription, and then knocking me off it because I had a cig, I thought that were terrible. I really did. Because I were doing really, really well, until they stopped, well not stopped it but the prescription weren't there" [Prisoner focus group 3]*

> *"I mean you would find sometimes, the frustrating thing about it [Name of Researcher] would be that sometimes they'd be on the smoking cessation course, and they'd be waiting for a prescription and it would go missing, and they'd end up not getting anything for that week so that would be quite…sometimes it was a little bit inconsistent to be honest" [Interview 12 – healthcare staff member]*

During this phase one research, a very new smoking cessation development occurred in each of the two prisons in the form of electronic cigarettes being introduced for prisoners to purchase on the prison canteen list. However, the prisoner participants were particularly critical of the electronic cigarette products they were being provided with. As opposed to being provided with rechargeable products that are available in community settings, prisoners are only provided with non-rechargeable products that are no longer usable once they run out. The prisoner participants complained that the electronic cigarettes available for purchase from the canteen list were far too expensive, and did not last very long, complaints which staff participants suggested were being echoed by the wider prisoner population at each of the sites.

> *"Mine ran out last night. Well I only bought one to give it a go, you know. I thought I'll buy one, see what it's like, if it cuts me down some of the burn, but it's gone" [Prisoner focus group 1]*

> *"But they're [e-cigarettes] quite expensive I believe, which is difficult given the limited resources that prisoners have" [Interview 8 – prison staff member]*

The prisoner participants suggested that these factors were potentially acting as a disincentive for prisoners to use these products and instead encourage tobacco use.

> *"It's four quid and it's the equivalent of thirty cigarettes. Most people in here smoke about twenty cigarettes a day, so money wise, you're better off buying baccy" [Prisoner focus group 3]*

Both sets of participants at Prison A and Prison B were very clear that increased smoking cessation support, and more affordable electronic cigarette products, would be required to encourage and help prisoners cease their smoking behaviour.

> *"With smoking it's the support there, which used to be here, but doesn't seem to be here anymore to actually get smoking cessation and stop" [Prisoner focus group 3]*

> *"We need to get decent products [referring to electronic cigarettes] that are easily accessible and easily affordable for them" [Interview 4 – prison staff member]*

The staff participants in particular were adamant that more support for prisoners is required, and for some this seemed to stem from their concerns around the impending introduction of the smoking ban, which was in discussion to be implemented after this PhD research project was complete.

> *"They should definitely bring the smoking cessation back in because I think with the smoking ban coming in it's really important…they need to start doing it sooner rather than later, instead of just suddenly telling people that they can't smoke without having something decent in place" [Interview 4 – prison staff member]*

> *"A lot of the population will be people who have smoked for a number of years who won't be able to just give up, so the smoking cessation and the support from the health service needs to very much be in place if it's going to be successful, and it needs to be in place before the ban is implemented" [Interview 7 – prison staff member]*

Although this need for smoking cessation services to be resourced was acknowledged by both prisoner and staff participants, concerns were raised at the ability of the prison and healthcare departments to support this due to capacity and finance constraints; this is discussed later in this chapter under the theme entitled 'scepticism'.

5.4.2 Not conducive to healthy diet

5.4.2.1 Poor diet

Overall, the prisoner participants talked very negatively about, and were very critical of, the diet provided to them in the prison. One of their main concerns around the diet was they felt that the quality of the food was very poor, and that there was a clear disparity between the menu and what was actually served to

them. For example, they talked about being given food that was rotten or had gone off, and being served food that was poorly cooked.

> *"They'll [jacket potatoes] be rock hard, you know, you cut it up and there might be black bits in there you've got to cut out" [Prisoner focus group 1]*

> *"And your fruit, it's got holes in. They get all the fruit from France and stuff like that, you know, they get all the rotten apples" [Prisoner focus group 2]*

The prisoner participants were particularly critical of the way in which vegetables were cooked at the prisons, suggesting that any nutritional value was lost as a result of the produce being over-cooked by the prison kitchen workers.

> *"Like your broccoli's supposed to be a bit hard, isn't it, for you to get your iron and stuff like that. When we get our broccoli in here it's soggy. You can tell it's just been over steamed" [Prisoner focus group 2]*

> *"You get set veg, which is normally boiled to within an inch of its life, all the nutritional value's gone out of it anyway" [Prisoner focus group 3]*

Additionally, the prisoner participants consistently referred to the diet as lacking in its health and nutritional value, a view which was also expressed by a number of the prison and healthcare members of staff. Both sets of participants talked about the food being high in carbohydrates and fat, with a distinct lack of healthy options available to prisoners.

> *"A lot of it is quite stodgy, high fat food, chips, pies, things like that" [Interview 4 – prison staff member]*

> *"I'd say it's chips or potatoes every day. It's just all carbohydrates" [Prisoner focus group 3]*

Both prisoner and staff participants attributed the prison's focus on providing a carbohydrate-laden diet as a result of the Prison Service wanting to fill prisoners up on the limited budget available for prisons to spend per prisoner per day on catering.

> *"As for diet, it's very limited because the prison have got a limited budget that they're allowed to spend on each prisoner, so it tends to be really highly carb led" [Interview 5 – healthcare staff member]*

> *"It's always chips that they're serving, and at dinner time they mainly get about six or seven slices of bread, and I'm sure that they give them that, you know, to fill them up" [Interview 6 – healthcare staff member]*

In terms of the prison diet meeting current recommended guidelines, both sets of participants viewed prisoners' ability to achieve the recommended consumption of five portions of fruit and vegetables per day as very difficult, if not impossible, due to the lack of provision of such foods at mealtimes. Both prisoner and staff participants suggested that the only way prisoners would be able to meet such a recommendation would be through buying extra fruit and vegetable portions from the canteen using their own money. However, the staff participants' perceptions of the prisoner use of the canteen would suggest that such is rarely done by prisoners, with numerous staff interviewees suggesting that most prisoner canteen purchases comprise of tobacco and unhealthier food choices.

> *"The diet's…if you're trying to get your five-a-day it's impossible" [Prisoner focus group 2]*
>
> *"Researcher: Overall, would you say that prisoners in here got their recommended five portions of fruit and veg a day?*
>
> *Participant: You must be joking! I think, I'm not sure, but I think they're only given the option of a couple of portions of veg at tea time and probably one portion of fruit. They'd have to top up on canteen and like I say, they go for the cheap unhealthy things full of sugar" [Interview 1 – healthcare staff member]*

The prisoner participants were particularly scathing of the portions sizes provided to prisoners, with the suggestion that they were far too small to be able to fill the adult male population as intended. This was a particular source of frustration for the prisoner participants, as it meant they would often go hungry with little they could do to address this.

> *"You'll get a little piece of lump, lump, lump, and that's it. You know, not enough to keep a mouse alive" [Prisoner focus group 1]*
>
> *"The pork pies were about that big. I wouldn't feed my three-year-old girl that, because they're so small" [Prisoner focus group 2]*
>
> *"I'm starving every night" [Prisoner focus group 3]*

One prisoner participant talked about how he and his cell mate frequently spend large amounts of money purchasing extra food from the canteen to mitigate against the small meal portions. Although the prisoner and staff participants did acknowledge that prisoners were able to increase their food intake through making food purchases from the prison canteen list in this way, with a number of prisoners doing so, it was suggested that not all prisoners would have the

necessary funds to be able to do this. Furthermore, there was a feeling among the prisoner participants that prisoners should not have to resort to such measures, but rather the prison should be providing them with adequate food portion sizes of better quality.

> *"There is quite a lot of things on there [canteen] that they can buy themselves to supplement their diet in prison, but I mean it's whether they've got the money coming in because some of them don't work and they don't always have family on the outside to send them money in" [Interview 9 – healthcare staff member]*
>
> *"Participant 1: I spend about £10 a week on food to be able to fill myself up. I get seven cans of tuna and seven cans of economy baked beans.*
>
> *Participant 2: That's quite healthy, tuna's healthy.*
>
> *Participant 1: Oh yeah, you get the protein in there, and the protein in the beans. I end up washing the tomato sauce off.*
>
> *Participant 3: Yeah, but he's having to buy it himself, that's the thing isn't it. He shouldn't be having to buy it" [Prisoner focus group 3]*

5.4.2.2 Choice versus no choice

While overall very negative about the diet provided, almost all of the participants, the prisoner participants included, acknowledged that there was an element of choice in terms of the food consumed by prisoners. Participants often made reference to prisoners being able to choose their preferred meal from the five different options available, with at least one healthy option always available. Moreover, both prisoners and staff acknowledged the availability of healthy food items listed on the prison canteen list for prisoners to purchase with their own funds.

> *"There is a healthy option on every meal, there is obviously food for vegans, vegetarians, normal diets, Muslim diets, so they have quite a cross selection of dietary requirements, soft diets, medical diets, you know, it's all catered for" [Interview 8 – prison staff member]*
>
> *"I mean there's certain things that you can order on the canteen that's a healthy option as well. I mean one time I think they could order vitamin tablets" [Interview 12 – healthcare staff member]*

For this reason, it appeared that a small number of the staff participants felt that prisoners are given a choice in whether or not they consume healthy as opposed to unhealthy diets during their time spent in custody.

> *"There is a healthy option if they want it, they can order salads and salad sandwiches" [Interview 4 – prison staff member]*

"Sometimes there's like chicken, like a chicken leg or chicken breast or, you know, that's healthier than pie, so there is some element of choice" [Interview 5 – healthcare staff member]

While the prisoner participants acknowledged that healthy options were available for them to choose from at mealtimes, they felt that a number of factors almost forced them into making more unhealthy diet choices. First was their perception that the healthy choices were not as filling as some of the more unhealthy options, with this appearing to be a significant deterrent from choosing healthy.

"They think I'm in jail, you know, I'm not going to go hungry and just get a salad, or have the tuna, you know. They're going to get what fills them up" [Prisoner focus group 1]

Additionally, they also described the healthy diet as monotonous and lacking in its variety, which again they suggested discouraged prisoners from making healthy choices, a sentiment that was also echoed by some of the staff participants.

"Researcher: So are you saying that if you were given…

Participant 1: We need a wider variety of healthy options to choose from.

Researcher: Then that might motivate you to…

Participant 1: They just seem to think in here that the healthy choice is vegetarian, which is not always the case" [Prisoner focus group 3]

"I think that because the options are so limited, if they don't like salad and that's the only healthy option, then they can't have it really" [Interview 9 – healthcare staff member]

5.4.2.3 Diet leading to weight problems

The prisoner participants did appear to be concerned about the impact the prison diet was having on their weight while in custody. Quite a few of the prisoner participants talked about how they had gained weight since coming into prison, and this was very much attributed to the food the Prison Service was providing them with.

"I should only be a 28-inch waist. I'm now 32. And it's not just me, I know a lot of guys on the wing who have gone like that, within twelve months, because they haven't been getting the standard of food that they would have outside" [Prisoner focus group 1]

"I'm going to get out like a slob if I don't, you know. The diet, it's… I just can't get my head round it" [Prisoner focus group 3]

Although attributing this gain in weight to the food provided, the prisoner participants felt there was very little they could do to mitigate against this. Due to the lack of choice, they either ate the food which was leading to the weight gain, or went without food, which understandably was not perceived to be a viable option.

> *"You're literally having to not eat to be able to lose weight, you know what I mean. Which is wrong, you need your meals don't you" [Prisoner focus group 3]*

Although the poor diet leading to weight gain was the main issue discussed by the prisoner participants taking part in these focus groups, this was by no means universal, with an acknowledgement that the diet was having a reverse effect with others and was actually leading to weight loss. For example, one of the prisoner participants talked about how he was trying to gain weight but was struggling to do so due to the lack of food provided to him. Furthermore, one of the healthcare staff interviewed, whose responsibilities included providing dietary advice to prisoners, explained that prisoners were increasingly seeking advice regarding weight loss as a result of the limited amount and poor quality of food being provided to them since coming into prison.

> *"You get a lot of people saying that they are losing weight through the diet in prison" [Interview 9 – healthcare staff member]*

5.4.2.4 Demand for healthy choices

The prisoner participants across all of the focus groups highlighted a need for more healthy and varied food provision to support them to live a healthy lifestyle while in custody, suggesting that there is a demand for healthy food options across the prisons. Such was also echoed by a number of the staff member participants, particularly those working in a healthcare capacity.

> *"They could give you more. Give you more of the healthy choice" [Prisoner focus group 1]*

> *"What they need is something like a tub of tuna in brine, rather than tuna in mayonnaise, with a salad…and the people I've spoken to, they'd love that sort of thing" [Interview 1 – healthcare staff member]*

Conversely, some of the other members of staff, particularly the prison staff from the more senior grades, appeared to disagree with the perspective of the prisoners, and instead suggested that there was a significant lack of demand for

the healthy options, and this was the main reasoning behind why there were limited healthy options available in comparison to some of the more unhealthier options.

> *"But over the years it has been…lots of prisoners would appear happy with chips, beans and sausages" [Interview 2 – prison staff member]*
>
> *"They only put on what they put on at the moment because if they put on loads of healthy stuff, the prisoners would moan, because actually, that's not what they're selecting" [Interview 7 – prison staff member]*

However, it is evident from the earlier subtheme that prisoners may not necessarily avoid choosing the healthier options because they would rather be eating unhealthier food, but rather they are potentially discouraged from choosing healthier food options due to such options not being enough to fill them up and lacking in their variety.

5.4.3 Not conducive to physical activity

5.4.3.1 Limited physical activity opportunities

When talking about physical activity levels and access to physical activity opportunities while in custody, the prisoner participants suggested that the environment encouraged more sedentary behaviour than participation in exercise. They felt that outside of the gymnasium in particular, limited space and a lack of facilities hindered their ability to engage in physical activity behaviour.

> *"Participant 1: On the wing you've nowt to do, you've got two pool tables.*
>
> *Researcher: So you think one of the reasons why people might not be…*
>
> *Participant 1: No. If they put a couple of exercise bikes on the wing, a lot of lads could just sit on and just peddle away for half an hour on association, you know, then go off and get a shower and bang up" [Prisoner focus group 1]*
>
> *"You bang your door, you've just had something to eat, you can't walk. What are you supposed to walk in your pad, how small is that?" [Prisoner focus group 2]*
>
> *"I'm an active person me, and I just don't get enough. I don't get enough. Sat down all the time" [Prisoner focus group 3]*

Although the staff participants acknowledged these limitations, they felt that the prison environment could support physical activity to some extent, as most

prisoners are provided with access to the gymnasium and daily access to the exercise yard.

> *"Physical exercise, they are entitled to go to the gym…so they do have access to do physical exercise if they want" [Interview 4 – prison staff member]*
>
> *"Participant: They do have opportunities to go out on exercise throughout the day, I think it's once in the morning and once in the afternoon.*
>
> *Researcher: Do you know how long that is?*
>
> *Participant: I think it's for about an hour" [Interview 6 – healthcare staff member]*

While provided with gymnasium access, it was evident from the prisoner focus groups that such access was highly variable, being dependent on a number of factors such as worker type, prisoner status (vulnerable prisoner versus normal location), Incentives and Earned Privileges (IEP) status (basic, normal or enhanced) and state of health. For some prisoners, such as full-time workers and those that worked in workshops as opposed to on the prison wing, there was a suggestion among the prisoner participants that access to the gymnasium for these types of workers could be quite restricted.

> *"It depends on regime, because with me working in kitchens I can get access to the gym five times a week. So with other people working in different jobs, they're not getting the same amount of gym as other people" [Prisoner focus group 2]*
>
> *"Participant 1: I get five sessions. One of them is the enhanced session, but it's only because I work on the wing. If you're a full-time worker on [name of wing] and you're off the wing in tea packs it's two sessions a week in here.*
>
> *Participant 2: It's bad isn't it" [Prisoner focus group 3]*

Similarly, whether or not prisoners were assigned the status of vulnerable prisoner appeared to play a role in gymnasium access, with the prisoner participants from the first focus group at Prison A, who were all vulnerable prisoners, describing how they had very limited access to the prison gymnasium due to their vulnerable status. Both they and the staff participants explained that this was as a result of them needing to be kept segregated from the wider prisoner population, as a necessary safety precaution due to their vulnerable status.

> *"You only get two sessions, and even then it depends on where your classes are" [Prisoner focus group 1]*

"They can't all just go to the gym, it has to be a specific day for them, so they can only ever go once" [Interview 5 – healthcare staff member]

Not only was the vulnerable prisoners' access to the gymnasium limited, but it was suggested that their access to the exercise yard was also limited. Although the vulnerable status prisoner participants talked about being given daily access to the exercise yard, they suggested that some prisoners with their status choose not to take advantage of this access, due to the stigma associated with the vulnerable prisoner label, and the potential likelihood of receiving verbal abuse from prisoners from other wings when out on the exercise yard.

"Participant 1: And when you speak to them about going out on association, out on exercise, a lot of them are intimidated by…the abuse from [Name of Wing].

Researcher: Abuse when you're on the yard?

Participant 2: Yeah, you'll get a lot of lads what won't go out because of the stuff that's shouted at them from [Name of Wing]. And, due to the fact that lads on [Name of Wing] will see them. They'll know it's [Name of Wing's] yard. And if there's lads who either, who want to move on, or they've come from a stage where there might be lads in jail on other wings, you know, to get back out, to be ID'd that they'd been on [Name of Wing], the VP wing, you know, they're going to be targeted outside in the community then. So a lot of people will not go out because of that fact" [Prisoner focus group 1]

Gymnasium access was also suggested to be determined by a prisoner's IEP status, with those placed on basic regime given very limited access. This limited access was suggested to be a punishment for those prisoners whose negative behaviours are non-conforming with prison rules and regulations.

"Basics are allowed a session a week, enhanced are allowed, is it, four sessions a week or something like that, well it's earned privileges isn't it? You know, it's something to work towards…everyone comes in on standard, and then they lose their rights…so if they'd been, you know, not so good, they lose those rights then" [Interview 1 – healthcare staff member]

The different participant groups expressed mixed feelings with the appropriateness of such a punishment, with many of the prisoner participants suggesting it to be unfair, while the prison staff participants perceived it to be an appropriate method to promote compliance with the prison regime.

"Participant 1: They don't let you go to the gym, do they.

Participant 2: Not if you're on basic no, it's not right is it" [Prisoner focus group 3]

"If you're not complying with the regime, you shouldn't get the extra niceties, you get the bare minimum" [Interview 2 – prison staff member]

It was not only gymnasium access that appeared to be impacted by being placed on basic regime though, with reference made to the fact that physical activity opportunities were more widely limited due to the lengthy periods of time basic prisoners are locked behind their cell door for.

"They can't go [to the gym], they're not even allowed out of their cell, so that does make it really hard for them to get that exercise" [Interview 6 – healthcare staff member]

"I feel like Charles Bronson mate. Fucking caged up man, I'm telling you"

"You're sat behind your door, you don't get to walk. If you're on basic and stuff, you just get let out for a bit, you can't go out; you don't go to exercise yard"

[Prisoner from focus group 2 placed on basic regime]

A final factor that was discussed by both prisoner and staff participants as limiting access to physical activity, through restricted access to the prison gymnasium, was if prisoners suffer from poor health, with those suffering from long-term conditions suggested to be unfairly prevented from accessing the prison gymnasium.

"I used to go to the remedial gym, but they've never… because I've had a stroke, and I have problems with my left side, you know, they won't take me down" [Prisoner focus group 3]

"I would love to be able to go, but the way it's set, I mean I now know I've about 5% lungs left, so they wouldn't even entertain me down there. But I would have loved to have gone when I first came in" [Prisoner focus group 1]

"Some of the gym staff say, oh no you've COPD or you've got asthma, you can't, you can't come to the gym, it's not, it's not worth the risk of you having an asthma attack…which is the wrong way to look at it, you know, they're still entitled to their sessions" [Interview 1 – healthcare staff member]

What was apparent across the prisoner participants at both prison sites regarding physical activity was the disappointment at the lack of opportunities to participate in group based/competitive sports. This appeared to be a particular source of contention, as they were aware that the facilities existed in the prisons for them

to undertake such group based competitive activities, however, they felt they were very rarely given the opportunity to use these facilities. They further talked about how, if given the opportunity, such group based competitive activities might actually encourage prisoners to increase their uptake of physical activity.

> *"Football is a very good healthy sport isn't it. It keeps your cardio going and we don't even have access to that (rereferring to the football pitch)" [Prisoner focus group 2]*
>
> *"Researcher: So you'd like to see more wing competitions?*
>
> *Participant 1: Yeah, it's a way of getting people motivated to be active" [Prisoner focus group 3]*

Although the staff participants at both prisons appreciated the value of group competitions and the potential for them to motivate, it was apparent they felt the prison regime and the staffing levels could potentially negate the ability to facilitate such group competitions, a factor which is explored further in the theme entitled 'scepticism'.

5.4.3.2 Overcoming physical activity barriers

While the prisoner focus groups and interviews with members of staff did reveal many barriers to physical activity, which have been discussed above, some of the staff members interviewed suggested that they had seen prisoners overcome these barriers through creating their own in-cell activity routines and capitalising on their time spent on the exercise yard.

> *"I know some do it [in-cell workouts], cause I only watched somebody doing it yesterday, they were showing me how they are doing it, so I know some do do it" [Interview 2 – prison staff member]*
>
> *"They have association every day…that's where they're outside in the fresh air and they can associate on the yard, and you get a lot of people saying if they don't have enough gym, they'll sort of circle the yard to keep their physical exercise up" [Interview 9 – healthcare staff member]*

Indeed, this did appear to be confirmed by a small number of the prisoners in the focus groups who discussed how they themselves undertake in-cell activity to keep fit.

> *"Participant 1: I do pad workouts me.*
>
> *Researcher: So you work out in your pads as well then?*

Participant 1: Yeah, I've got my routine every morning where I get up and before I have my breakfast, I have a workout that I do.

Participant 2: I do them as well, just not every day like [Name].

Participant 3: I do, yeah" [Prisoner focus group 3]

However, such may not necessarily be an easy task to achieve given the physical constraints discussed earlier in this theme.

5.4.3.3 Weights versus cardiovascular

Even in cases where prisoners are afforded opportunities to undertake physical activity in the gymnasium, there was a perception among the staff participants that the majority primarily focus on muscle strengthening exercises through the use of weights, rather than undertaking forms of beneficial cardiovascular activity. They felt that there was such a focus on weights, as they perceived prisoners aspiring to bulk up while they are in custody.

"It's the weight training that goes off, that's what the majority of the prisoners go to the gym for, it's so they can bulk themselves up inside" [Interview 8 – prison staff member]

The prisoner participants themselves appeared to support this viewpoint, as when talking about themselves and others using the gymnasium, they primarily discussed using weights and using the gymnasium to improve their appearance.

"It's full of young lads in the weights room" [Prisoner focus group 1]

"Participant 1: (talking about using the gym) I just want to, I want to look good for when I get out.

Participant 2: Yeah, you don't want to get out and look skinnier than when you came in" [Prisoner focus group 2]

Such responses would suggest that any intervention looking to promote healthy forms of physical activity among prisoners should aim to shift this focus in thinking from primarily doing weights, to instead having a varied exercise regime consisting of both muscle strengthening and cardiovascular activities.

5.4.3.4 More gymnasium time required

When the prisoner participants were discussing what could help motivate and increase their physical activity levels, they consistently referred to being given more access and opportunities to use the prison gymnasium, suggesting that they equated physical activity purely as gymnasium time as opposed to anything else.

Indeed, some of the staff members interviewed appeared to think in a similar vein, as there was a perception that an increase in the amount of gymnasium sessions offered was the only way of encouraging physical activity among prisoners.

> *"Researcher: Is there anything that you feel would help you develop a healthy lifestyle while you're in here?*
>
> *Participant 1: Yeah, more gym sessions.*
>
> *Participant 2: More gym sessions.*
>
> *Participant 3: Exercising, isn't it" [Prisoner focus group 2]*
>
> *"They might have to look at how they can kind of encourage more gym sessions more frequently" [Interview 12 – healthcare staff member]*

The subthemes explored above offer numerous reasons behind why prisoners, and staff, may equate physical activity as purely gymnasium attendance as opposed to anything else. The first relates to the physical constraints of the prison environment impacting prisoners' ability to undertake physical activity outside of the prison gymnasium. As discussed earlier, many of the prisoner participants felt limited space and a lack of facilities outside of the prison gymnasium hindered their opportunities to engage in activity, which could understandably lead prisoners to perceive that the gymnasium is the only viable space in which they are able to undertake meaningful forms of physical activity.

A second potential explanation behind this association with physical activity and the gymnasium could be the apparent focus on weights over cardiovascular activities. Prisoners are not allowed to use weights in the prison anywhere outside of the gymnasium, and the engineering of weights from common items to be used in cells is against the prison rules and regulations at both prisons. As weights appear to be the main form of physical activity that dominates the exercise regime of most prisoners, with the prison gymnasium the only legitimate environment in which weight-lifting can be undertaken by prisoners, this could explain why prisoners and staff see the gymnasium as being the only way of encouraging exercise among prisoners, as this is the only means of them being able to lift weights in the prison environment legitimately.

Regardless of the reasoning behind why increased access to the gymnasium was perceived by the prisoner participants as the primary, or only, way of increasing and encouraging physical activity among prisoners, there was a clear demand

from the prisoner participants for more gymnasium sessions. However, it was evident that both prisoner and staff participants were sceptical of the prisons being able to facilitate increased gymnasium sessions for prisoners, and this is explored later on in this chapter (see theme 5.5.).

5.4.4 Not just about prison – entrenched behaviours

Although there was a perception among most of the participants that the prison environment posed limitations to prisoners' abilities to lead healthy lifestyles in custody, there appeared to be a belief among the staff participants that smoking, poor diet and physical inactivity are prevalent and entrenched behaviours among prisoners prior to their imprisonment, and that they continue to engage in such behaviours on their entry into custody. Moreover, staff suggested there may be a lack of awareness on the part of prisoners regarding how to actually lead a healthy lifestyle.

5.4.4.1 Live unhealthily in the community

The staff participants interviewed did appear to acknowledge a number of the factors relating to the prison environment that were not conducive to leading a healthy lifestyle. However, the staff participants across both prison sites did appear to believe that high smoking levels, unhealthy diets and sedentary behaviours are not necessarily behaviours that are just taken up in prison, but rather are part and parcel of prisoners lives before they enter custody, and thus are quite entrenched behaviours that can be difficult to modify. When talking about prisoners lifestyles prior to custody, the staff participants frequently referred to prisoners coming from socially deprived backgrounds, with unhealthy lifestyles being all they've ever known.

> *"Well most of them have smoked for most of their life haven't they…and I wouldn't say they live a particularly healthy lifestyle out in the community" [Interview 6 – healthcare staff member]*

> *"Smoking, drugs, crime and eating rubbish has been part of their lives before they've come in, and for some of them, that's all they've ever known" [Interview 11 – prison staff member]*

5.4.4.2 Lack of awareness

In addition to this perception that smoking, poor diet and sedentary living are entrenched behaviours among prisoners, the staff also appeared to hold a

perception that prisoners are unaware of how to lead healthy lifestyles, and are unaware of the negative impact of their lifestyles upon their health. The apparent lack of awareness of prisoners about a healthy diet in particular was a major discussion point. For instance, the healthcare members of staff that were interviewed who were responsible for providing dietary advice to prisoners all recounted experiences where they had consulted with prisoners who were unaware of the negative impact that their unhealthier eating habits were having on their health.

> *"I actually had a man who was diabetic and his blood sugars were all over the place…so I lifted his canteen sheet and he was ordering jammy dodgers and two litres of full-fat coke every week, and it was just the fact that he didn't know" [Interview 5 – healthcare staff member]*

> *"I do the Wellman screenings here and we do the bloods for diabetes and cholesterol and all that sort of thing, and a lot of people are actually surprised if they've got raised cholesterol and they say 'why is that?' and 'what do I need to do?', and, so I think just basic advice on…diet is a good place to start, because a lot of people don't have that basic knowledge" [Interview 9 – healthcare staff member]*

5.4.5 Theme summary

Within this theme, the prisoner and staff participants discussed extensively the barriers to leading a healthy lifestyle within prison. Smoking was deemed to be a valuable coping mechanism for the prisoners, and something that is part and parcel of prison life. The lack of physical activity opportunities was discussed extensively, with access to the prison gymnasium suggested to be highly variable. Staff explained that even when prisoners are given opportunities to utilise the gymnasium, there is an over focus on the use of weights, suggesting that prisoners physical exercise routines do not necessarily meet recommended guidelines of a combined exercise routine consisting of both cardiovascular and muscle strengthening exercises. The prisoner participants at both sites were overwhelmingly negative in their attitude towards the diet provided for prisoners. Although staff acknowledged the limitations of the diet, they did suggest that there is an element of choice and that healthy options are available for prisoners to choose from at all meal times. However, the prisoners suggested that these were not chosen as they are usually lacking in their variety and not enough to fill. The staff appeared to perceive that unhealthy lifestyles are not something that is

unique to the prison, but rather that prisoners lead unhealthy lifestyles out in the community and continue to do so on their entry into prison. There was a clear demand from the prisoner participants for support to lead healthy lifestyles during their time spent in custody. The prisoners identified a need for more healthy and varied diet choices, more access to the gymnasium and better access to smoking cessation support services to enable them to modify their lifestyles while in prison. Although both sets of participants identified that such demands need to be resourced to support prisoners, there appeared to be a high degree of scepticism about the prison and healthcare department's ability to meet such a demand; this is explored further in the following theme.

5.5 Scepticism

As discussed in the preceding theme, increased access to smoking support services, better access to the prison gymnasium and different activities, and the provision of more healthy and varied diet choices were identified as being required in order to support prisoners to lead a healthy lifestyle within prison. However, both sets of participants had an overall negative attitude towards the prison and the healthcare department's ability to resource a healthier lifestyle, and this was primarily down to perceived capacity and budgetary constraints.

5.5.1 Capacity a limiting factor

When discussing the need to provide resources to support prisoners to live a healthy lifestyle, the participants talked about how such support could be difficult to facilitate due to limited staff resources. The prisoner participants felt the healthcare department were far too under-staffed to be able to provide the necessary smoking cessation support to enable prisoners to cease their smoking behaviour while in prison.

> *"At the minute there's not enough staff to even run the smoking cessation clinics, never mind give that ongoing support that we need" [Prisoner focus group 3]*

> *"Healthcare staff are lovely, they're nice, but they don't have time" [Prisoner focus group 2]*

The healthcare staff interviewed were acutely aware that their staffing levels were impacting on their ability to provide smoking cessation support to the prisoners.

At both sites, the healthcare department had members of staff trained in providing smoking cessation support that were not delivering these programmes as staffing levels were at such a reduced capacity. Indeed, one of the healthcare staff participants, who had previously delivered smoking cessation support to the prisoners, described how it had become untenable to continue providing smoking cessation support to prisoners given the demands of their high workload.

> *"Because of my role and because I'm doing so many different things, I couldn't commit 100% to these guys which was part of the problem, why I had to stop doing it" [Interview 6 – healthcare staff member]*

> *"We have such reduced capacity, we have some nurses who are trained in smoking cessation that don't actually deliver it" [Interview 10 – healthcare staff member]*

In addition to limited capacity to provide necessary smoking cessation support, both sets of participants perceived there to be limited staff capacity in the prison gymnasiums to be able to facilitate more gymnasium sessions for prisoners, which, as discussed earlier in this chapter, was deemed crucial by participants in helping prisoners to increase their physical activity levels. It was not only increased sessions that were felt to suffer as a result of limited capacity, but also the ability to provide physical activity sessions involving group competitions, which again had previously been identified as a potential motivating factor to encourage physical activity uptake.

> *"It's just access to the actual gym itself, but it's probably full stretch in the gym as it is...I don't think they've the staff to be able to take any more down or put on extra sessions" [Interview 4 – prison staff member]*

> *"At this moment in time, we're struggling staff-wise to be able to deliver that [group competitions]. But believe you me, if we had the opportunity to take them out there and play 11-a-side football, not just 11-a-side football, take them out there and play softball…minor games, we could take them out there and play minor games on a competition basis" [Interview 11 – prison staff member]*

5.5.2 Finance a limiting factor

Both prisoner and staff participants felt that finance played a large role in prisoners' ability to modify their smoking, diet and physical activity behaviour while in prison. This was most pronounced with regard to the diet. There was a perception that the dietary budgets are constantly being cut which renders the

catering department in a difficult position where they are limited in terms of what they are able to provide to the prisoners. Both sets of participants felt that the diet would be highly unlikely to change in prison to become more healthy as a result of these budget constraints, something that appeared to be a source of grievance for both the prisoner and the staff participants.

> *"It's up to the kitchen really to provide better choices, but then that comes down to money, they can't afford to do that, blah, blah, blah" [Interview 3 – prison staff member]*
>
> *"It will be the same old 'it's down to budget and this is all we can do on a budget'. That's what they always say about diet" [Prisoner focus group 3]*

Although most prominent with regards to diet change, limited finance was also suggested to play a role in prisoners' ability to stop smoking and increase their physical activity levels, primarily as a results of its resultant impact on staff resources to support such behaviours.

> *"There just isn't the budget for the prison staff needed to give them more access to the gym" [Interview 6 – healthcare staff member]*
>
> *"We just don't have the financial budgets available to increase the staffing so we're at a level where we're meeting the demand for smoking cessation" [Interview 10 – healthcare staff member]*

5.5.3 Lack of supporting change impacting peer-led intervention

Due to the capacity and financial constraints, some of the prisoner participants expressed scepticism regarding just how much a peer-led intervention could help prisoners to modify two of their NCD risk-behaviours in particular; diet and physical activity. Specifically, they felt that without changes to the prison regime, through better menu choices and increased access to the prison gymnasium, their attempts to eat healthier and engage in physical activity could continue to be hampered.

> *"Participant 1: For smoking I think it'll help. I can't see how it would help for diet or exercise.*
>
> *Researcher: Why is that?*
>
> *Participant 1: Obviously, with diet, it would have to backed up by them actually changing the food, or possibly making the food cheaper on the canteen, which won't happen.*
>
> *Participant 2: Exactly.*
>
> *Researcher: And what about physical activity?*

Participant 1: Well it's the same, we're not going to be given more sessions at the gym to do that" [Prisoner focus group 3]

5.5.4 Theme summary

This theme was epitomised by negativity towards prisoners being able to modify their behaviour to become more healthy while in custody. Both prisoner and staff participants explained that capacity and financial constraints severely restrict the ability of prisoners to change their behaviour while in custody, recounting examples where these factors had impacted upon the smoking cessation resources available, the ability to access the gymnasium and the food provided. This led participants to question how helpful a peer-led intervention could be in helping prisoners to modify their dietary and physical activity behaviour.

5.6 Positive views towards prison peer-led interventions

The prisoner and staff participants had overwhelmingly positive attitudes towards the use of peer-led interventions in prisons. They discussed some of the existing peer-schemes implemented at the prisons, and the perceived benefits these interventions have for the peer-workers delivering them. Almost all participants talked about how and why peer-interventions tend to result in better engagement compared to staff-led initiatives.

5.6.1 Positive schemes already exist

When discussing the potential to implement a peer-led intervention in prison to modify smoking, diet and physical activity levels among prisoners, the majority of the participants in the focus groups and interviews talked about how there were already numerous existing peer-mentor schemes running in each of the prisons. Prisoner and staff participants explained that these peer-led schemes had been accepted and embraced by prisoners and staff alike, with the prison Listeners and the healthcare representatives particularly valued peer-led schemes. It was also felt that the existing peer-led schemes were well accessed by the prisoners at each of the two prison sites, and were overall very successful.

"Toe-by-toe is a good example. It took a long time to get going, but now throughout the prison it's accepted, recognised, and there is no stigma" [Prisoner focus group 1]

"I know we've not always had the healthcare reps and staff are really supportive of that because they help us, they can save us time because they direct prisoners to the service that they need" [Interview 9 – healthcare staff member]

"We've found that to be quite successful in a number of other things…we do it in a number of other areas now and it really is quite successful" [Interview 7 – prison staff member]

5.6.2 Beneficial for the peer-workers

One of the benefits of peer-led interventions that staff participants frequently made reference to was the potential positive impacts working in such a role may have on the peer-workers delivering the peer-led intervention. They perceived that prisoners working in peer-roles are more likely to progress through their prison sentence, and are potentially at increased odds of being able to gain employment on release from custody as a result of working in a peer role.

"It's also something that can help them because it helps them move through the prison system, get their Category D status, and it might even benefit them when they get released" [Interview 9 – healthcare staff member]

"Participant: What we get them [gym mentors] to do is to mentor prisoners down here, so then they build a portfolio, so they take their own clients down here…They may put a programme together, bring it to us, we'll have a look through it, make sure it's alright, tick the box, sign it for them and say 'yes, go ahead with that programme', and that's part of their portfolio to build when they actually go out there and say 'please Sir can I have a job?'…and 'this is what I've been doing'.

Researcher: So evidence of their work in prison?

Participant: Yes, evidence of what they've been doing" [Interview 11 – prison staff member]

The staff participants also talked about peer-led interventions in terms of the benefits it can bring to peer-workers on a personal level. The responsibility and ownership given to those prisoners working in peer-roles was perceived by staff to contribute towards enhanced feelings of wellbeing among the peer-workers. Indeed, one of the prisoners that participated in one of the prisoner focus groups described how he felt he had personally benefitted from working in a rewarding role where he was able to help other prisoners.

"I'm all for the lads in this jail taking stuff on and taking a bit of responsibility…It's confidence isn't it and a feeling of worth" [Interview 12 – healthcare staff member]

"[talking about peer mentoring] And I did it for long enough…I was really grateful at the end, of being able to help so many people" [Prisoner focus group 1]

5.6.3 Benefits versus staff-led interventions

When asked about their views towards peer-led interventions, prisoners and staff both consistently drew comparisons with staff-led interventions, highlighting the particular advantages that peer-led interventions have versus staff-led initiatives in terms of promoting engagement and increasing the amount of support on offer.

5.6.3.1 Peers have a better understanding

Both the prisoner and staff participants explained that they felt that peers are often better placed to advise than staff members due to their shared understanding. They felt that this shared understanding leads to better engagement with interventions, as due to their shared experience of imprisonment, peers can fully appreciate what the recipients of the intervention are going through in a way that staff cannot. For example, they highlighted that a member of staff could never fully understand what it is like to stop smoking or try and have a healthy diet in a prison environment, as they themselves have never experienced imprisonment. It was this shared understanding that participants explained leads to more respect and engagement.

"You want somebody who has been through that experience…It's like a man telling a woman childbirth, it's so easy, and all this. They're never going to sit there and listen to it" [Prisoner focus group 1]

"How would I know what's best about in-cell activity when I have never been locked up, how would I know about helping people stop smoking when I have never smoked, how would I know about diet for prisoners, what they want most, when I've never been a prisoner, so surely prisoners who have made a success of certain things, or ex-prisoners even, whoever it is, it has got to be beneficial to help change in prisons, because I don't understand, I understand how prisons work from my point of view, but how could I possibly comment on how prisoners find things. I can't" [Interview 2 – prison staff member]

Indeed, one of the healthcare staff participants previously responsible for providing smoking cessation support, explained that they often struggled to advise prisoners on aspects of smoking cessation, as they did not have a full understanding of exactly what it is like to stop smoking within prison. They felt that peers may be able to generate more ideas than staff members around what

prisoners can do while in custody to help others stop smoking, as they have a full understanding of what the prison is like and the restrictions it poses.

> *"They can come up with more ideas of how they can break the habit, change the routine" [Interview 6 – healthcare staff member]*

5.6.3.2 More trust and honesty

Further to a better understanding due to shared experiences, the staff participants felt that in comparison to staff-led interventions, peer-led schemes generate more trust and honesty. The staff participants appeared to think that prisoners are distrustful of staff, and suggested that prisoners would be much more likely to be open and honest with one of their peers rather than a member of staff.

> *"I still do think they're more likely to own up to a prisoner on the wing, that actually they've had a relapse and he had two cigs yesterday, than they would say to me" [Interview 5 – healthcare staff member]*

> *"They don't always believe what staff are saying and they think there's an ulterior motive" [Interview 7 – prison staff member]*

5.6.3.3 Peers relatable

The prisoner participants appeared to value the aspect of similarity and relatability that peer-interventions bring, suggesting that they would be much more inclined to listen to advice given by a peer than a staff member. For some of the prisoner participants, it came across that they held an 'us and them' sort of attitude towards staff, with the staff participants also believing this to be true.

> *"They don't talk down to us because they're one of us aren't they" [Prisoner focus group 2]*

> *"It's easier to relate to somebody who is in the same situation as you are" [Prisoner focus group 3]*

> *"I think they sort of feel like it's sort of an 'us and them' type of thing" [Interview 9 – healthcare staff member]*

The prisoner participants also explained that a peer leading an intervention, who themselves had changed their behaviour in a positive direction, can lead to better engagement with an intervention and help to motivate other prisoners. For example, a couple of the prisoner participants recounted how they took more notice of, and motivation from, other individuals (prisoners or ex-prisoners) who were like them and had changed their behaviour.

"It gives you a little bit of motivation and self-belief because like, they've all been in the same boat kind of thing. So you think well, if he can do it, then I can do it" [Prisoner focus group 1]

"There's been a few lads that have come in from the outside. And there's a particular lad who has been to jail himself, yeah, he's been, done the drugs like what we have yeah. And I take notice of him because like, if he's done what we've done, like he has done, and then gone out and changed his life around, stopped taking drugs, stopped drinking, and then he's coming in to jail talking to other people about what drugs can do to you and that" [Prisoner focus group 2]

5.6.3.4 Peers not an authority figure

Prisoner and staff participants both felt that prisoners can be quite resistant to staff-led initiatives, as staff members are perceived by many prisoners to be authority figures that tell prisoners what to do rather than advise. They talked about staff members dictating behaviour like school teachers within a classroom, and the uniform of staff acting as a barrier. From the point of view of the prisoner participants, the resistance to authority seemed to stem from their perception that staff already dictate prisoners behaviour with regards to compliance with the prison regime, and therefore they were resistant to staff further dictating their own personal behaviours that were unrelated to the regime. In contrast, both sets of participants appeared to believe that prisoners would be more open to peer-led initiatives, as peers were felt to be more like friendly role-models advising and making suggestions as opposed to authority figures dictating behaviour.

"You're not a person of authority who is locking the door. And that's what a lot of them resent on the wing" [Prisoner focus group 3]

"I think sometimes they feel like we're telling them rather than advising them, whereas I think if a prisoner was saying the exact same thing, they would be more likely to listen" [Interview 9 – healthcare staff member]

5.6.3.5 Peers easier to talk to

Peers were also deemed to be easier to talk to than members of staff, with prisoner participants indicating that if they had any problems it would be much easier for them to approach and discuss these problems with their peers than it would be with a member of staff. They explained that this is because peer to peer discussions provide much more of a relaxed environment to discuss problems than do prisoner and staff discussions. This was also echoed in the staff

participant interviews. For example, one of the staff members explained that prisoners have to be reliant on staff members for certain things that only they can help with, but then with other things, prisoners would be much more likely to seek support from their peers.

> *"Because it would be a bit more relaxed and easier to communicate with the other prisoners" [Prisoner focus group 3]*

> *"They'll come to us for one thing, and depend on us for that thing, you know, help with, I don't know, whatever, visits, money, canteen, anything, but then all the little things…they'll go to each other. So it's like a little network" [Interview 3 – prison staff member]*

5.6.3.6 Peers more accessible and flexible

This sub-theme was epitomised by the perception that prisoner peers have more time to support and advise prisoners compared to staff. Participants remarked that staff are not always there, or are too busy undertaking their other duties, meaning they often do not always have the time to provide the necessary support prisoners may require. From the perspective of the staff participants, it came across that they saw the peers as being a replacement for them when they are too busy and unable to support.

> *"There's only a couple of officers a wing so we can't go around and see everybody that wants help because we just don't have the staff. We sort of rely on Listeners, PID workers and healthcare reps to be there for people" [Interview 3 – prison staff member]*

In terms of the proposed intervention, participants explained that having a peer responsible for providing support would mean that support was always available to prisoners should they need it. Participants referred to existing services led by staff, explaining that prisoners are currently restricted to the defined times that the services are on offer, meaning they could often have to wait lengthy periods before being given access to the relevant staff member for support. In contrast, peers were perceived to be on hand 24-hours a day.

> *"We're not a 24-hour service [Name of Researcher], do you see what I mean, so prisoners are always there to support each other if it's needed, but we're not" [Interview 12 – healthcare staff member]*

> *"I mean yeah, because that's something you'd miss out with a member of staff, wouldn't you. You wouldn't have somebody there to go to all…"(interrupted) [Prisoner focus group 2]*

Due to this perception that prisoner peers have more time to support than do staff, participants explained that the support on offer for smoking, diet and physical activity could potentially be increased from what is currently offered. Moreover, one thing that was perceived to be particularly advantageous by the prisoner participants was the ability to seek advice from peer workers on the wing if the recipient of the intervention missed a session. Again something they felt they would miss out on with a staff-led intervention.

> *"If somebody is struggling and they've missed a session, then they could always go to that person and talk about their concerns" [Prisoner focus group 1]*

5.6.4 Supportive of peer-led NCD risk-factor intervention

In light of the many perceived benefits of peer-led initiatives in prison discussed above, most of the prisoner and staff participants appeared to support the idea of developing and implementing a peer-led intervention to modify NCD risk-behaviours among prisoners. Almost all of the prisoner participants stated a preference for a peer to lead such an intervention, making reference to peers lack of authority and greater understanding and relatability.

> *"Because you'd get a little bit more rapport, wouldn't you, and it's easier to relate to somebody who is in the same situation as you are" [Prisoner focus group 3]*
>
> *"They don't talk down to us because they're one of us aren't they" [Prisoner focus group 2]*

Additionally, the majority of the staff participants stated a willingness to support such a scheme, again referencing peers' enhanced understanding, relatability and ability to offer support where staff are unable to due to capacity pressures.

> *"Researcher: So you would be supportive of it? Why is that?*
>
> *Participant: Absolutely, yes. Why not? I don't know, I always find it really difficult when people say we know what is best for prisoners, when they have not been a prisoner" [Interview 2 – prison staff member]*
>
> *"Participant: I think it would be amazing.*
>
> *Researcher: Why do you think it would be good?*
>
> *Participant: For the smoking, they would have more success, it would be fair to the lads. We can't give them what they need, we can't, not at this minute in time, maybe that will change, it's the staffing and*

because of expectations for people's roles, and because of the environment" [Interview 6 – healthcare staff member]

However, such positive views were not held by all participants, with a small minority of participants particularly resistant to the suggestion of implementing a peer-led intervention to modify prisoners smoking, diet and physical activity behaviour. One of the prison staff participants was particularly damning of the suggestion to develop and implement the proposed peer-led intervention, making continual reference to their belief that prisoners could not be trusted to work in such a role, and instead suggested that any proposed intervention to modify smoking, diet and physical activity would be best delivered by the prison gymnasium officers.

"If they haven't got control over them then they will diversify, for want of a better word, and they will find chinks in the armour, they will find ways around things and so on and so forth. It has been proven time and time and time again, you give them enough rope and they hang themselves, basically" [Interview 11 – prison staff member]

It was apparent throughout the interview that this participant's resistance towards peer-led schemes, and the role of the proposed intervention in particular, stemmed from their belief that peer-roles were a threat to the job security of prison officers in a climate where officer numbers were continually being cut. As a result, they viewed the proposed peer-led intervention for this study as a direct threat to their own job security.

"Researcher: What are your thoughts on introducing a prisoner-led intervention to help with smoking, diet and physical activity?

Participant: Ohhhh, that's political isn't it?!

Researcher: Why is it political?

Participant: Because it's what we do" [Interview 11 – prison staff member]

"What you don't want to do is get to a level where your jobs are taken away from you, and I will speak openly and honestly about that, because it's something that is, is…well it's obviously, it's your own protection isn't it" [Interview 11 – prison staff member]

One of the prisoner participants from the focus groups was also vehemently negative towards a proposed peer-led intervention, but for obviously different reasons. Unlike the other prisoner participants in the focus groups, this participant felt that they would not be able to trust the advice of a prisoner peer due to their

lack of qualifications and necessary expertise. Instead, they suggested that when seeking help for the NCD risk-behaviours of interest, they would be much more inclined to seek professional support from a suitably qualified and experienced member of staff whose advice they perceived to be more sound and accurate.

> *"They're professionals in dieting and smoking, they've gone to University for months, years. You put people on the course on peer intervention for a couple of months, are you really going to believe what's coming from that person" [Prisoner focus group 2]*

This prisoner participant also felt that they would not be able to trust a prisoner peer-worker from the perspective of keeping confidential the discussions they have with their prisoner clients, and again suggested this to be a significant factor in their resistance towards peer-led services within prison.

> *"Participant 1: It's confidential as well, isn't it, you know, how can you talk to another prisoner about your confidential stuff.*
>
> *Participant 2: Well there's other...*
>
> *Participant 1: I'd rather speak to a professional down in healthcare, than someone on the wing who's going to go blabbing" [Prisoner focus group 2]*

5.6.5 Theme summary

The prisoner and staff participants interviewed held prison-based peer-led interventions in high esteem, describing the many benefits that peer-led interventions have in comparison to staff-led initiatives. The participants valued the existing peer-schemes already operating in each of the prison establishments, and viewed these to be well accessed and highly successful. Due to these many perceived benefits, participants were overwhelmingly supportive of the suggestion to develop and introduce a peer-led scheme to help aid prisoners modify their smoking, diet and physical activity behaviour. Although attitudes towards peer-led were overall very positive, a number of participants did acknowledge the pitfalls of peer-interventions in prison, and these are discussed further in the following theme.

5.7 Peer-led interventions in prison – the downfalls

Although most of the participants talked about peer-led interventions in prisons in positive terms and their many benefits, participants did acknowledge that peer-

led interventions can have their disadvantages also, and these primarily related to the hierarchical structure of peer-interventions, and cases where peer-workers have taken up the role for the wrong reasons. Additionally, participants described how they felt that the proposed peer-led intervention could not be something that is entirely peer-led, with rationale put forth for staff being involved in the delivery of the intervention.

5.7.1 Resistance to hierarchy

The prisoner and staff participants explained that overall they felt peer-led interventions are well received and well accessed in prisons for the reasons described in the preceding theme. However, they did suggest that not all prisoners are receptive of peer-interventions. They talked about how peer-interventions can sometimes create a hierarchical structure where prisoners are resistant to taking advice from prisoners who they believe to be working above their station. For example, one of the staff participants explained that some prisoners within the gymnasium resist advice provided by the peer-mentors working there, as they see the mentors as of being on equal par with them, and thus they view them as having no rights to be advising other prisoners.

> *"Participant 1: Because sometimes, someone won't want to listen to another prisoner, they'll go, 'oh whatever, you're just chatting shit'.*
>
> *Participant 2: Or 'you're just another prisoner so why should I listen to you'" [Prisoner focus group 3]*
>
> *"You get, some would respond better to staff, others that might, you know, would feel like they were, I don't know, above their station maybe and lording it a bit" [Interview 4 – prison staff member]*

5.7.2 Peers working in the role for wrong reasons

A further pitfall of peer-interventions that was discussed extensively by both prisoner and staff participants, was that often prisoners apply to work in peer roles for their own self-centred reasons, rather than because of wanting to help other prisoners. They described scenarios where they had seen prisoners apply for peer-roles for reasons such as getting extra gymnasium sessions or other earned privileges, being given more freedom to move around the prison establishment, progression through their sentence and to move illicit items, such as drugs, around the prison establishment.

"A lot of people were doing it for their own personal issues, for IEP, for the Cat D status. They're not really bothered about what they're doing" [Prisoner focus group 2]

"Some of these people in positions of trust are doing it for their own ends, to get out quicker, it looks good on their prison record and all the rest of it. So they are playing that end game, the long game, they're not necessarily doing it because they want to do good work and help other people" [Interview 3 – prison staff member]

One of the prisoners in the focus groups admitted himself that he had obtained and worked in a peer role as it gave him extra benefits, such as helping him move towards his Category D status and more freedom to move around the prison. This element of prisoners working in peer-roles for purely selfish reasons was a clear source of concern for the prisoner participants and for some of the staff members, and something they felt a proposed peer-intervention to modify NCD risk-behaviours among prisoners would need to mitigate against. This idea of mitigation against prisoners working in peer-roles for self-centred motivations is explored later in this chapter (see section 5.8).

5.7.3 Problems with entirely peer-led

As evident from the preceding theme, the views of participants towards prison-based peer-led interventions were overall very positive, and most voiced a preference for an intervention to modify smoking, diet and physical activity to be peer-led as opposed to staff led. However, participants did express that they felt such an intervention could not be solely peer-led. One of the main concerns the participants expressed was they that they felt an intervention led solely by a peer could lack the necessary structure and order required to support behaviour change. As the participants primarily viewed the intervention as something that should be delivered in a group setting (see section 5.12.3), participants described how they felt that without a staff member present to support the peer, recipients may just view the intervention as an opportunity to socialise, as opposed to focusing on the tasks at hand. Thus they felt having a staff member present to oversee and support the group was pivotal in ensuring a level of order and control over the intervention.

"It'd need staff to make sure it stayed on track" [Prisoner focus group 2]

> *"They'll just use it as a chance to chat for an hour and they'll get nothing out of it otherwise so it definitely needs to be supervised" [Interview 5 – healthcare staff member]*

Not only was there a perception that staff need to be involved to keep order, participants also suggested that healthcare staff would need to be involved in order to manage smoking cessation medications. As will be discussed later in this chapter, the majority of participants felt that smoking cessation medications would need to be provided alongside the peer-led intervention to support those wanting to stop smoking, and for this reason they were very clear that a healthcare member of staff would need to be involved in order to prescribe such medications, as such is understandably out of the remit of a prisoner peer. They also expressed doubt as to a peer being able to monitor other prisoners smoking cessation progress while prescribed smoking cessation medications, suggesting that the CO measuring equipment required for monitoring purposes could not be entrusted to a prisoner to manage.

> *"If you've got a healthcare assistant maybe delivering it with the prisoner, I think that might work… If there's medications they could help with that side of things too because obviously the prisoners leading it wouldn't be able to get involved with that" [Interview 9 – healthcare staff member]*

> *"Too much, too expensive a machine [referring to CO machine]…But a staff member could go around with them and do that but the prisoner rep wouldn't be able to manage that machine" [Interview 5 – healthcare staff member]*

Staff involvement in the intervention was also deemed crucial from the point of view of supporting the peer-workers to fulfil their role. Participants felt that it would be very difficult for a peer-worker to carry out their duties to the full potential without the support of a dedicated staff member behind them. They described scenarios where the peer may need support from staff to respond to queries that they are unsure about, and also acting as a support for peers if they were experiencing any difficulties due to the demands of the role. One of the prisoner participants in particular emphasised this point, recounting the value of the regular emotional and practical support provided to the prisoner Listener workers by the Samaritan managers at the sites, suggesting that a similar support be in place for the peer-workers delivering the proposed intervention of this PhD project.

"Participant 1: You're going to need something behind it to help you, and give you that extra assistance. It's got to be there though, hasn't it, you know. It can't just be us on the wing, or whatever wing you come from, you're going to need a system at the back end, for all wings to be able to go to and say look, I've got this going, I've got a problem, how do I take it further. Or the problem is insufficient supply, either get it sorted otherwise it's not going to work.

Researcher: So do you mean…

Participant 1: There's got to be a dedicated staff member for them to go to" [Prisoner focus group 1]

"I think it's just somewhere for them to go isn't it, to get the information, or to have, you know, support" [Interview 4 – prison staff member]

Due to the aforementioned problems with the intervention being solely led by a peer, participants had an overwhelming preference for a combined peer and staff led approach. However, it was apparent that they felt that the peer workers should take the lead due to their perceived increased ability to engage with the prisoners, with the staff member taking more of a supportive role through ensuring the intervention is running as intended and on hand to provide assistance to the peer-workers if required.

"Participant 1: It would be nice to be delivered by the prisoner, with the support of a staff facilitator.

Participant 2: So kind of like now, like we're having this group discussion, but you're making sure that we stay on track" [Prisoner focus group 3]

5.7.4 Theme summary

Although bringing many benefits, participants felt that peer-interventions are not without their disadvantages. They felt that while most prisoners would be receptive of a peer-led intervention to modify NCD risk-behaviours, due to reasons already discussed, such a format would not appeal to all due to the hierarchical structure inherent in prisoners advising other prisoners. Participants also highlighted the danger of prisoners applying to work in peer roles purely for the advantages the peer-workers experience themselves, rather than for altruistic reasons. Finally, participants highlighted the potential limitations the researcher may face if developing a peer-led intervention lacking any staff support, with suggestions that such an intervention would lack the necessary order and control, be unable to provide and monitor smoking cessation medications, and lack the

necessary support for the peer-workers to fulfil their role to the full potential. As a result, both prisoner and staff participants advocated the involvement of staff in the delivery of the proposed peer-led intervention.

5.8 Success dependent on peer

When discussing their views towards the potential implementation of a peer-led intervention to modify NCD risk-behaviours among prisoners, it was apparent that the staff participants felt very strongly that the success and credibility of such an intervention would be very much dependent on the strength of the peers leading the intervention.

> *"If you pick the wrong person and it goes a bit wrong, then the whole scheme is going to be put in jeopardy isn't it. The prisoners are going to have a lack of faith in the system, and if you lose that prisoner trust, then you're on the back foot straight away aren't you" [Interview 8 – prison staff member]*

> *"I think it depends on the lad leading it, if they're good and they've got a little bit of character, then yes, I think the prisoners will respond well to that, yes" [Interview 12 – healthcare staff member]*

Both prisoner and staff participants discussed what they believed were the necessary attributes and qualities that peers should hold to ensure intervention credibility. Moreover, they highlighted the key barriers to finding suitable peers, and mitigating factors to ensure that the more suitable peers are selected and kept at the prison establishments over prisoners they deemed to be less suitable for the role.

5.8.1 Desirable attributes and qualities

Participants emphasised the attributes and qualities that they felt were the most important to look for in a prisoner peer to deliver an intervention to modify NCD risk-behaviours among prisoners. Interestingly, both the prisoner and staff participants appeared to concur that the following were the most important qualities to look for in a peer worker; a good role model, experienced behaviour change themselves, educated/skilled, aspires to help others, a strong and confident character and trustworthiness.

5.8.1.1 Good role model

Most of the participants commented that they felt the peer-worker would need to be a good role model, both in terms of displaying the behaviours they were looking to encourage among the recipients of the intervention (i.e. non-smoking, active and eating healthily), and with regards to behaviour complying with the prison regime. The former was deemed to be particularly important, with participants explaining that it would be hypocritical to have a peer leading an intervention who was exhibiting all the behaviours they were trying to discourage among the recipients of the intervention. They suggested that they would not heed advice from somebody who they felt did not model the positive behaviours they themselves were encouraging.

> *"It would be a bit hypocritical wouldn't it, if somebody who hadn't stopped smoking was trying to get everybody else in the room to stop smoking" [Prisoner focus group 3]*

> *"If I went to my doctor and they told me that I needed to lose weight and they were 20 stone themselves, I would struggle with that" [Interview 2 – prison staff member]*

When talking about the peer needing to be a good role model, some of the prisoner and staff participants made reference to the prisoner mentors who work in the prison gymnasiums. They explained that the gymnasium mentors would be a good role model for an intervention looking to modify smoking, diet and physical activity, as typically, the gymnasium mentors exhibit all the behaviours such an intervention would be looking to encourage.

> *"I mean you get gym orderlies, a typical example is a gym orderly that absolutely lives and breathes the gym, generally speaking they don't smoke so they're setting a good example" [Interview 12 – healthcare staff member]*

In addition to being a good role model in terms of not engaging with the NCD risk-behaviours, the prison staff participants consistently mentioned that a peer-worker would need to be a good role model in regards to a past record of positive behaviour within the prison, with any record of engagement with negative behaviours necessary criteria to preclude a prisoner from working in a peer-role. This was because it was felt that such negative behaviour was a good indicator of a lack of suitability for the role.

"Well certainly no adjudications for, recent adjudications for, drugs, bullying, fighting, things like that" [Interview 3 – prison staff member]

"If you've got a prisoner who is always in conflict with the prison regime then he's not going to be any good as a peer-mentor is he?" [Interview 8 – prison staff member]

For this reason, these prison members of staff frequently referred to the researcher obtaining the views of wing staff prior to recruiting a specific prisoner into a peer-role, as it was perceived that these wing staff would be well placed to advise on the prisoner's suitability for the role.

"Have a word with the wing staff who know them well and see what they're like, you know, and get their input" [Interview 3 – prison staff member]

5.8.1.2 Experienced behaviour change

In addition to being a good role model, the prisoner and staff participants explained that they would ideally look for a peer who themselves had experienced behaviour change. They referred to the success of other interventions, such as narcotics and alcoholics anonymous, where the peers leading had themselves experienced behaviour change and the inspiration that this promotes. This previous experience of behaviour change was primarily discussed in terms of smoking cessation, with participants consistently proposing that the peer would need to be somebody who had stopped smoking, and preferably during their time in prison. There was a perception among the participants that a peer who had never smoked would lack that shared understanding, and therefore be unable to give appropriate and suitable advice to the recipients of the intervention; this links into the sub-theme discussed earlier regarding the shared understanding of imprisonment and the engagement that this promotes.

"You get somebody who has done it for a while and then they can sit there, they've like gone through a course and that, then they're going to listen to them, aren't they, because it's like, when you go to a NA [Narcotics Anonymous] meeting right, because I'm on the recovery wing, so every Monday we go to NA meetings. And there's been a few lads that have come in from the outside. And there's a particular lad who has been to jail himself, yeah, he's been, done the drugs like what we have yeah. And I take notice of him because like, if he's done what we've done, like he has done, and then gone out and changed his life around, stopped taking drugs, stopped drinking, and then he's coming

in to jail talking to other people about what drugs can do to you and that" [Prisoner focus group 2]

"It's very easy to read the book, do the course and then preach to people, but unless you've gone through it and experienced it, I don't think you get that respect from the prisoners" [Interview 6 – healthcare staff member]

5.8.1.3 Educated/skilled

The prisoner and staff participants emphasised the importance of recruiting a peer possessing the necessary education levels and skills required to fulfil this peer role. They explained that suitable education and skill levels were critical, as the peer workers would be the active agent that the health information being delivered to recipients was relayed through. Moreover, they felt that there was a danger that incorrect information may be delivered to recipients if the peers were lacking in their educational and skill levels.

"They need to be able to learn about smoking, nutrition, activity and remember what they've learned and share that information with the group" [Prisoner focus group 3]

"You are better getting somebody with better skills because then obviously the information is going to be more accurate" [Interview 9 – healthcare staff member]

When queried about what the participants viewed as the right levels of education and skills, participants discussed these in terms of advanced levels of reading and writing. Although this was deemed to be a crucial attribute of a peer-worker by the participants, the staff participants in particular conveyed reservations about the researcher's ability to find peers with such skills, and this is explored further later on within this theme.

5.8.1.4 Aspires to help others

As discussed earlier on in this chapter, participants identified one of the main general barriers of peer-interventions as being scenarios where prisoners apply to work in peer roles for purely selfish reasons, such as for progression through their sentence and extra earned privileges. When discussing the idea of a peer-led intervention for this PhD project, participants felt that the peer leading the intervention should be somebody who aspires to help other prisoners rather than somebody who is working in the role for their own gain. They suggested that the

peers would need to be invested in helping others wanting to change their behaviour, and should be 100% committed to the intervention and its aims.

> *"Somebody who is invested in it rather than I've got a T-shirt and I'm the rep sort of thing" [Prisoner focus group 3]*
>
> *"Somebody want's, who's sort of looking out for other people, that's the main thing, they want to help other people and not just do it because they get privileges" [Interview 9 – healthcare staff member]*

5.8.1.5 Strong and confident character

Both sets of participants explained the need for the peer to be strong-willed and confident in their nature. These qualities were felt to be important in terms of the peer being able to facilitate and lead a group, in addition to having the confidence to speak up should anything untoward occur. For example, some of the more senior prison staff participants in particular suggested that peers would need enough confidence to speak up and highlight if the intervention recipients were believed to be taking advantage of the intervention for their own gain, say for example by seeing the intervention as opportunity for extra time out of their cell.

> *"Someone who commands a bit of respect…who is not going to get, you know, shouted down every two minutes…who can hold his own" [Prisoner focus group 3]*
>
> *"They need the confidence to say actually 'Mr Smith shouldn't be on this course because he's not on it for the right reasons'" [Interview 2 – prison staff member]*

5.8.1.6 Trustworthy

A common feature across the prisoner focus groups and staff interviews was the suggestion that peer-roles within prison are deemed as 'trusted' roles, and thus any prisoner wanting to work in such a role would need to fit the criteria of being 'trustworthy'. This concept of trustworthiness appeared to be in reference both to the peer-workers being able to maintain principles of confidentiality regarding their discussions with their prisoner clients, and being trusted by the prison to work in a peer-role which has inherent risks in terms of potentially facilitating behaviours that are against the prison rules and regulations.

> *"Participant 1: You're not going to go and tell somebody like [name of prisoner] your stuff, are you? Let's have it right so…*
>
> *Participant 2: Yeah [laughs].*
>
> *Researcher: Why, is he not trustworthy?*

Participant 2: He's like Jeremy Kyle.

Participant 3: I wouldn't tell him how to get out the damn door" [Prisoner focus group 1]

"You need them to be honest, don't you? Because you don't want somebody who's bloody corrupt, getting them in to get all the patches and give false readings" [Interview 6 – healthcare staff member]

5.8.2 Barriers to finding the right peer

While participants identified the numerous desirable attributes to look for in a peer to deliver a peer-led intervention, participants felt that the researcher may experience difficulties in finding and keeping a suitable peer to deliver the peer-led intervention.

5.8.2.1 Turnover

One major barrier identified by prisoner and staff participants at each of the two prisons was the suggestion that the high turnover of prisoners at each of the establishments may potentially negate the ability to find and keep appropriate peers at the prison sites. Participants at Prison A explained, that as the prison is a remand prison, prisoners can be frequently released at short notice and very often transferred on to other prisons. Regarding this latter point, participants at Prison A felt there were inherent risks that the peer-workers for the proposed peer-led intervention to modify NCD risk-behaviours may be transferred, unless holds were put on their prisoner record. This was a real concern for the prisoner participants who felt there should be consistency in the peers delivering the intervention, with clear emphasis placed on the need to try and hold the peer-workers from being transferred.

"We are a remand prison so there is always that risk that the people that you get to deliver it, that they might get moved on. You could be a few weeks in and they get transferred on somewhere else" [Interview 3 – prison staff member]

"It has to be in stone that they're going to stay here, you don't want a different person leading the group every week" [Prisoner focus group 1]

When queried about the potential to place holds on the peer-workers, most of the staff participants from Prison A seemed optimistic about the ability to do this, highlighting instances where they had known prisoners working in some peer-roles to have remained at the prison for a sustained period of time.

"[Name of Prisoner], he's a healthcare rep and he's been here forever so they must be able to do something" [Interview 6 – healthcare staff member]

Some of the participants, the prisoner participants included, made reference to that fact that holds would be likely as it would be a waste of time and resources to train the peers up and then transfer them to another prison.

"I mean there's no point having a different person every week doing it is there, once they have been trained up, and you're investing in those people to deliver, you know, so obviously they're not just going to keep shipping them out every week" [Interview 4 – prison staff member]

What was apparent from the discussions with the prison staff participants at Prison A, was that certain criteria may increase the likelihood of the prison agreeing to hold prisoners, such as their sentence length and type of crime.

"It is basically, above all it's length of sentence, type of crime and the locality. If they live around here, they will probably stay around here, if they're doing less than, I don't know, six months for instance, something like that. But if you're getting someone in who has just got 15 years for armed robbery or something like that, they're not going to be staying here" [Interview 3 – prison staff member]

Turnover of peers was also suggested to be problematic at Prison B. However the staff here were less optimistic about the ability to place holds on peer-workers than at Prison A. The staff participants at Prison B explained that those suitable for this peer-role, in terms of the attributes discussed in the preceding sub-theme, would be highly suitable for being granted Category D status. As a result, these staff participants suggested that those peers trained up to fulfil the role may only be in post for a short period of time before being moved on to a Category D prison establishment. In contrast to the viewpoint of some of the participants at Prison A, the participants at Prison B suggested that it would not be realistic to try and hold the peers in such scenarios, as Category D prisons present much more opportunities and less restrictions when compared with Category C prisons.

"They're normally more educated, therefore they don't have an extensive criminal record, they're more likely to get their Category D status, their HDC [Home Detention Curfew], therefore their stay in Prison B is normally, or can be, shorter than other prisoners" [Interview 8 – prison staff member]

"Because obviously if somebody's got a chance of going to a Cat D, then they get quite a lot of freedom during the day on the Cat D, and

they can get home and they can have a car and things like that" [Interview 12 – healthcare staff member]

5.8.2.2 Peers doing job for the wrong reasons

As discussed in earlier subthemes (5.7.2 and 5.8.1.4), there was a perception among participants that peers do not always put themselves forward for such roles because they actually want to help people, but rather because they see the role in terms of personal gain. Prisoner and staff participants expressed a concern that prisoners may see the proposed peer-led intervention to modify smoking, diet and physical activity as an opportunity to abuse the system, with prisoners putting themselves forward to work in the peer role purely for their own self-centred reasons. They talked about prisoners seeing the role as an opportunity for further time out of cell and a way of progressing through their sentence. Moreover, they also felt that given the focus on physical activity, prisoners may view the role as coming with increased access to use the gymnasium.

"Some of these people in positions of trust are doing it for their own ends, to get out quicker, it looks good on their prison record and all the rest of it. So they are playing that end game, the long game, they're not necessarily doing it because they want to do good work and help other people" [Interview 3 – prison staff member]

"You're gonna get people thinking if they do it they'll get extra gym. You can't have someone coming to be a peer-mentor and saying to them, you get a gym session at the end of it. Because you know what, yeah, 99.9% of them, they're going to do it just for that gym session" [Prisoner focus group 2]

What was most alarming was the perception of the participants that the prisoners may abuse the role for illicit purposes. They talked about the peers bullying recipients for their medication if smoking cessation medications were to be provided alongside the intervention, and they also felt that peers may abuse the freedom of the position to move illicit items, such as drugs, around the prison establishments.

"Because they're mobile around the prison and everything, quite often they can be at higher risk of, you know, taking illicit drugs round and stuff" [Interview 10 – healthcare staff member]

"They might abuse prisoners who are on the course to stop smoking, you know, bully them for their patches or their Champix" [Interview 6 – healthcare staff member]

5.8.2.3 Finding peers with the necessary intellectual skills

There were conflicting views among the staff participants as to whether or not intellectual ability posed a significant barrier to finding a suitable peer to deliver the proposed intervention of this research project. It is well documented among the literature that prisoners in the UK have lower than average reading and writing levels when compared to the general population (Prison Reform Trust, 2014). Some of the staff participants interviewed drew upon this and held a belief that the researcher would struggle significantly to find a prisoner with the suitable levels of education and skill to work in a peer-role delivering the intended intervention. They talked about how very few prisoners in the prisons possess educational qualifications, with some of those involved in the recruitment of peer-workers recounting their difficulties in finding peers with the right levels of skill.

> *"We find that with our peer-mentors at the moment, that we struggle to get good peer mentors because we expect them to have the literacy and numeracy skills to carry out the task of peer-mentoring" [Interview 8 – prison staff member]*

> *"At the moment, we're very, very short on mentors because of the level of education that we're getting into, they don't actually meet the educational criteria" [Interview 11 – prison staff member]*

However, this view among staff was not universal, as some of the other staff members interviewed felt intellectual ability was not a significant barrier that needed to be overcome. While they acknowledged that some prisoners do face difficulties with their literacy skills, they argued that there are others within the prison establishments who are highly skilled. For example, one participant talked about coming across prisoners who had previously been employed prior to imprisonment who were responsible for tasks that were intellectually quite demanding. The participants also talked about how there are numerous other intellectually demanding work roles within the prisons, with suitably qualified prisoners working in these roles, and thus for this reason they deemed there to be cohorts of prisoners who would meet the necessary intellectual and skill level to work in the peer-role.

> *"But people like our Listeners and PID workers are good examples, because they're skilled enough, they've got through the training and help prisoners, so there are some people with the skills you'll need" [Interview 3 – prison staff member]*

"I think you've got as many able people, intellectually, as you have, sort of, people who aren't as able" [Interview 9 – healthcare staff member]

5.8.3 Enablers to support finding the right peer

Although acknowledging the difficulties posed in finding a suitable peer to deliver an intervention to modify the NCD risk-behaviours of prisoners, both prisoner and staff participants also identified enabling factors which may help to encourage finding a suitable peer to deliver the proposed intervention of this PhD project. Such enabling factors included careful and stringent selection and suitably incentivising the intervention.

5.8.3.1 Careful selection

Given the many concerns raised regarding the possibility of prisoners applying to work in peer roles for the wrong reasons, the staff participants in particular highlighted the need for careful and stringent selection of peer-workers to be undertaken in conjunction with the security department at each of the prisons. They discussed aspects such as having a stringent person specification which prisoners must meet, as well as interviewing prisoners for the role to ensure that they can evidence their ability to meet the person specification and the job description.

"You need to look at your criteria very closely for what prisoners you deem, you wish to carry out the service" [Interview 8 – prison staff member]

"I think the same kind of stuff that we do with the healthcare reps…erm, we have, you know, strict criteria. We put out the job application, we interview them, you know" [Interview 10 – healthcare staff member]

A number of the prison staff participants also referred to checking up on prisoners behaviour throughout the rest of the prison, such as through the wing officers, to ensure that the 'right' peers are chosen.

"Speak to people like, you need to seek advice, obviously, if they've been on the wing a while, people that work on the wing would know them, you know what I mean, see if they're bad, any bad behaviour, any adjudications" [Interview 4 – prison staff member]

Both prisoner and staff participants referred to the need for the selected peer-workers to be vetted and security cleared as part of the selection process. They explained that this is a requirement for all peer-roles in prison, and that it would

be required for the peer-workers to mitigate against the occurrence of incidents against the prison rules and regulations.

> *"They'll need to be security cleared to do it" [Prisoner focus group 2]*
>
> *"They'd obviously have to go through security to check that there's no sort of intelligence or anything like that on them" [Interview 9 – healthcare staff member]*

5.8.3.2 Incentivising the peer-role

The prisoner participants thought that suitable incentives may motivate prisoners to come forward to work in the peer-role and carry out the job to a high standard. However, they seemed to be particularly wary of incentivising through the provision of extra gymnasium sessions, and this was primarily due to the reasons discussed earlier; namely that they perceived that prisoners would put themselves forward for the role just because of the extra gymnasium sessions. Instead, the prisoner participants made suggestions of incentivising the role through ensuring that the job was a full-time paid role as opposed to a voluntary role. They remarked that if the role was a paid one, prisoners would be much more motivated to fulfil the role to a high standard.

> *"If they did get paid that might motivate them to work a bit harder. But if they didn't get paid for it, I don't think they'd be motivated or bothered about it" [Prisoner focus group 2]*
>
> *"Participant 1: I think it would be better if you were paid, for the simple reason that if they're doing it voluntary...they're not going to put the time and effort in.*
>
> *Participant 2: They're not going to do it.*
>
> *Participant 3: They're not going to put the effort in yeah.*
>
> *Participant 1: They're just going to wing it" [Prisoner focus group 3]*

5.8.4 Theme summary

Participants remarked how the success of any peer-led intervention is dependent on the peers chosen to lead such interventions, with reference made to numerous qualities and attributes to look for in a prisoner applying to work in a peer role, such as being a positive role model and wanting to work in the role for altruistic purposes as opposed to for selfish reasons. While noting these desirable attributes, participants expressed that the researcher may experience difficulties in finding and keeping the right prisoner for the job, with the biggest barriers

relating to finding someone who is intellectually able and then being able to keep them at the prison (i.e. hold them from being transferred) to deliver the intervention over a sustained period of time. Although there were mixed responses as to whether or not a suitable peer could be 'held' from transferring once recruited and trained, participants described how they felt the other aspects of finding a suitable peer may be mitigated through a careful and stringent selection process and through suitably incentivising the role to motivate the peer to carry out the job to a high standard.

5.9 Managing risks

Both the prisoner and staff participants made numerous references to the intervention being open to certain risks and felt that such risks would need to be managed appropriately. These primarily related to the intervention being perceived as a high-risk activity and being open to the opportunity to abuse.

5.9.1 Intervention open to abuse

The prisoner and healthcare staff participants in particular remarked how the professionally-led smoking cessation service on offer in the prisons was frequently abused by prisoners who would sign up to the course for reasons such as to get extra time out of their cell, or just to obtain smoking cessation medications to trade illicitly with other prisoners. Indeed, one of the prisoner participants from the focus group at Prison B explained how he himself had illicitly bought smoking cessation products from another prisoner who had obtained these through participating in the professionally-led smoking cessation group on offer at the prison. Some felt the proposed peer-led intervention of this PhD project could be abused in a similar vein, particularly if smoking cessation medications were to be prescribed alongside it.

> *"You'd get a lot of lads as well, that had, 'right it's bang up now', they'd see the smoking people come on the wing…'right I'm off to see these'" [Prisoner focus group 1]*

> *"So if you had meds prescribed for this they could be exchanged, the patches, the patches could become the new tobacco" [Interview 5 – healthcare staff member]*

Some of the prison staff also acknowledged the intervention as an opportunity for abuse, describing the wider negative impact it may have on the prison environment. For example, they made reference to the fact that prisoners, whether that be the peer-workers or the recipients of the intervention, may view the proposed intervention as an opportunity to traffic illicit items, such as drugs, around the prison establishment.

> *"People could sign up to the groups purely for the reason that it's an opportunity to pass drugs to someone that can go back to their wing and distribute them. We have to be careful that this isn't seen as an opportunity to do that" [Interview 7 – prison staff member]*

> *"One of the things that we're mindful of down here is when they do [name of group], because it's a classic place for them to pass and swap…so one of the things we've got to be mindful of on a Monday and Wednesday afternoon is that the showers are policed and all the quiet areas are policed… so really, on Wednesday afternoon, we're here, there and everywhere" [Interview 11 – prison staff member]*

5.9.2 Assessment and monitoring

In light of the intervention being open to such abuses, some of the prisoner and staff participants remarked that initial motivation to change behaviour was important, and that potential recipients of the intervention should be assessed prior to accepting them on to the peer-led intervention. The prisoner participants particularly felt strongly about this, suggesting that this was needed as having recipients on the course who were there for the wrong reasons could be detrimental to the other group members.

> *"We would need some assessment of why they are doing it" [Interview 2 – prison staff member]*

> *"Researcher: You said people who go on the course should want to be motivated. What made you say that?*

> *Participant 1: Because they've got to really want to do it otherwise they're just going to be sat in a group with people, it's just going to piss off the group. So the people who do want to stop smoking are just going to think fuck that, I can't be arsed, because he's in here, fucking [unclear] concrete, fuck that.*

> *Participant 2: Yeah, only people who are motivated and really want to stop should be allowed on the course.*

> *Researcher: So you think we should try and assess people beforehand to try and see if they really are motivated to change their lifestyle, to improve their diet and stop smoking?*

Participant 1: Yeah" [Prisoner focus group 1]

The prisoner participants seemed to condone the idea of taking a zero-tolerance approach with those perceived not to be meeting the expectations and requirements of the peer-led intervention, suggesting that those continuously missing intervention sessions or causing disruption during the session be removed swiftly from the intervention.

> *"They need bringing off, they need to come off. If they're not going to attempt or try to do what's being asked of them. Because they've put in for it initially, haven't they, so if they're not going to try then there needs to someone new on the course" [Prisoner focus group 3]*

5.9.3 Exclusions from participating

The prison staff participants from the more senior grades also described how the researcher would need to liaise with the security departments at each of the prison sites, explaining that certain prisoners would have to be excluded from the group due to the risk that they may pose to other group members. They explained that certain prisoners are unable to mix with one another due to their risk of violence and the potential disruption they may cause to the group as a result. One senior level member of prison staff in particular held very strong feelings that prisoners placed on basic regime would need to be excluded from the proposed intervention due to the risks they pose to other prisoners.

> *"It'd be like E-list prisoners, prisoners that you know, high risk prisoners that, you know, are not allowed to share with other people" [Interview 4 – prison staff member]*

> *"If they're going to be put on basic during the group, then yes they would probably have to come off because I can't think of any reasons why they would be put on basic which isn't severe enough to mean that they're not a control issue" [Interview 2 – prison staff member]*

This mitigation of risk through potentially excluding prisoners from being able to participate in the proposed intervention, particularly on the basis of them being placed on basic regime, was a source of contention for some of the healthcare staff and prisoner participants who felt that such was unfair.

> *"For me it's a treatment…they should be able to attend the healthcare group regardless of whether they're on basic" [Interview 5 – healthcare staff member]*

> *"Things happen. Someone might, I've got nothing, I'm not doing nothing, and someone hits me, I'm getting basic…And I want to sort*

my life out. So you'd have to push and try and get me out the pad" [Prisoner focus group 3]

5.9.4 Theme summary

Unsurprisingly, given the environment, the participants discussed the proposed peer-led intervention in terms of the potential risks it poses and they suggested processes to put in place to mitigate against risks. Participants felt recipients may apply to undertake the intervention for reasons other than wanting to actually change their behaviour, such as to traffic items around the prison establishments, obtain more time out of cell or to be prescribed smoking cessation medications to trade illicitly. As a result, the participants made suggestions regarding assessing initial motivation to change behaviour before accepting recipients on to the intervention, and removal from the group if not complying with expectations. Moreover, the senior members of prison staff interviewed described how some prisoners would have to be excluded from participating in the proposed group intervention, due to the potential risks these individuals may pose to others in the group.

5.10 Prison regime impact

During the discussions with prisoner and staff participants, numerous barriers to successful implementation and embedding of the peer-led intervention as a result of regime and logistical issues were identified, some of which were perceived to be more problematic at Prison A than Prison B. The main regime and logistical concerns that were suggested to be potentially problematic were venue, movement, lack of prison officers to supervise the intervention and competing priorities.

5.10.1 Venue

While offering some suggestions as to where a group intervention to modify prisoners smoking, diet and physical activity behaviour could be held, most of the participants at Prison A made reference to the difficulties the researcher would face in finding a suitable venue, citing problems with escorting if the intervention was held away from the prison wings, a lack of rooms suitable to hold a large

group of prisoners on the prison wings, and departments competing to use the limited group rooms available.

> *"Not having any facilities, space, areas to actually hold group sessions, that's the main thing" [Interview 1 – healthcare staff member]*
>
> *"Participant: I used to always have problems trying to get a room that's big enough to hold a small group, but you still may have 15 people in there...A lot of classes take place on the wings so the rooms may already be booked up, the rooms that are available aren't big enough.*
>
> *Researcher: I was going to say are there rooms on each of the wings?*
>
> *Participant: Yes you do have classrooms, but nine times out of ten they're booked up" [Interview 6 – healthcare staff member]*

Such did not appear to be problematic at Prison B, with both prisoner and staff participants providing numerous examples across the site where the intervention could potentially be held.

> *"I don't think you'd struggle to find a place to hold it. I mean we've even got the healthcare reps room at the bottom of healthcare that's being used, and that's being used for things like that" [Interview 9 – healthcare staff member]*

5.10.2 Movement

Participants at Prison A also suggested that prisoner movement would be another significant barrier to the intervention, specifically if the intervention was to be held in a group room away from the prison wings. They suggested that if such were the case, there would be difficulties with regards to prisoners being able to move from their wing to the venue, as a prison officer would be required to escort recipients to and from the venue. This was something that the participants at Prison A perceived to be an enormous challenge to overcome given the lack of prison officers to undertake such tasks.

> *"The challenge would be there, would be staffing because obviously, like with your call-ups, you would need the staff to take them from one area to another wouldn't you" [Interview 4 – prison staff member]*
>
> *"We don't have the staff at the moment on the wings to group those people together and take them to where they should be, collecting off each wing by whoever is organising the group that you're doing" [Interview 3 – prison staff member]*

A prime example of this was actually observed during the conduct of one of the prisoner focus groups at Prison A, where a participant asked to leave the group discussion early due to a conflicting appointment. When the prison officer

overseeing the focus group discussion (from outside of the room) requested for support from another officer to attend the venue to escort this participant back to their wing, they were advised that there were none available to undertake this task.

In contrast, prisoner movement to and from the intervention at Prison B was perceived by participants to be relatively easy, and thus not a threat to the peer-led intervention. Participants explained that ease of movement of prisoners at Prison B is facilitated by a process called 'line route', in which prisoners are able to move across the prison site un-escorted by officers at set times throughout the day to attend things such as work, education and healthcare.

> *"We have the first line route in which all the prisoners are moved at the same time and then we have movements every 15 to 20 minutes after that, so I don't think you would have any trouble, sort of, with people moving about" [Interview 9 – healthcare staff member]*

Indeed, one participant who had experience of working at both sites explicitly stated that the prisoner appointments process was much better at Prison B than at Prison A, as a direct result of the line route movement process.

5.10.3 Lack of prison officers to supervise/oversee

The staff participants at both prisons explained that the intervention would need to be overseen by a member of prison staff for safety reasons. They elaborated that a prison officer would either have to be present in the room where the group was being run, or in the nearby vicinity to be on hand should an incident occur. Although this was deemed to be pivotal, staff at both sites expressed concerns around the prisons being able to facilitate such, as they felt that the prison staffing levels were well below optimum.

> *"I think the biggest obstacle you're going to have is having the prison officers to facilitate any of this from the supervision angle, because they don't have any spare" [Interview 5 – healthcare staff member]*

> *"They are short of prison officers and there is a shortage, they always say there's a shortage in healthcare staff but there is a huge shortage of prison staff as well" [Interview 12 – healthcare staff member]*

5.10.4 Competing priorities

In addition to this barrier of overseeing the intervention, participants across both sites appeared to believe that the senior management at each of the prisons had

more pressing concerns to deal with, and that the proposed peer-led intervention may potentially suffer as a result of these competing priorities. For example, the participants talked about other things within the prison taking precedence over behavioural health intervention work, such as job interviews, delivery of canteen and major incidents, and that if push came to shove, the intervention group sessions would be cancelled in order to facilitate these more important priorities.

> *"There's always things that they cancel because of incidents that happen on the wings and that sort of thing, and the first thing that is going to go is group work, that sort of thing, anything that's not seen as vital" [Interview 1 – healthcare staff member]*
>
> *"Researcher: Getting the prison to buy into it. What do you mean?*
>
> *Participant 1: The governor.*
>
> *Participant 2: The governor. I mean they've got so much other stuff going on, haven't they, that it's not a priority" [Prisoner focus group 2]*

At Prison A in particular, many of the staff participants commented how the prison had an explicit focus on ensuring that prisoners are attending work or education during the working week, and how this focus on attendance at work and education would be prioritised over any health intervention, the peer-led intervention included. The healthcare staff in particular gave examples of the difficulties they faced in facilitating important healthcare appointments for prisoners, as such appointments were interfering with their work or education.

> *"Well the prison are very strict about prisoners attending work or education throughout the day, so it's very difficult to pull them out of that so they can attend a group session" [Interview 6 – healthcare staff member]*
>
> *"[The Governor's] adamant that, you know, people are not going to be coming to healthcare for a diabetic clinic appointment or a heart disease, COPD appointment when they should be at work" [Interview 1 – healthcare staff member]*

The rationale for why there was such a focus on ensuring prisoners are attending work or education during the working week was attributed by the Prison A prison staff participants as a result of needing to ensure that prisoners are engaged with meaning and purposeful activity while in custody. However, some did acknowledge the value of other activities outside of work and education.

> *"Researcher: Right, could this [the peer-led intervention] be classed as meaningful work though?*

Participant: Yes, of course it could. You know, surely visits are quite meaningful as well…but, anyway, that's not our argument, that's lead policy makers that decide things like that" [Interview 3 – prison staff member]

5.10.5 Theme summary

Within this theme, numerous regime and logistical barriers to the successful implementation of the proposed peer-led intervention in the prison environment were identified. However, it was evidently clear from the analysis that participants from Prison A were much more negative regarding the potential impact of regime and logistics on the successful implementation of the intervention, with lack of a suitable venue, difficulties with movement and attendance at work all highlighted as significant barriers at Prison A, but not at Prison B. However, there were some shared regime and logistical concerns expressed by participants at both prisons, and these primarily related to a lack of officers to supervise the intervention and the intervention being low on the agenda of senior management in comparison to other more important priorities.

5.11 Increasing staff buy-in

5.11.1 Lack of buy-in

The prisoner participants suggested that a lack of buy-in, particularly from prison staff, may pose a serious risk to the implementation of the peer-led intervention aiming to modify prisoners smoking, diet and physical activity. Indeed, one participant from the focus groups detailed how the negativity of prison staff members had negated the positive work that the St. Giles Trust were undertaking with prisoners.

"I work with St. Giles and there's lots that St. Giles could do, but because they're so ambivalent towards it, they couldn't really care less, then it stops the message being spread down to the rest of the prisoners of what can be done, what service can be provided" [Prisoner focus group 2]

The prisoner participants were mixed in their feelings as to why they felt the prison staff would be ambivalent towards the peer-led intervention, with some suggesting that prison staff just do not care about the health and wellbeing of prisoners, and thus would be resistant towards the intervention, while others

suggested that the resistance stemmed from the change in routine and the extra work that the peer-intervention would bring for prison staff.

> *"We're just numbers to these lot in here, that's all we are man. They don't give a shit about us" [Prisoner focus group 2]*

> *"I don't think they'd be resistant towards the group, it would be just resistance to the extra work, to opening the door" [Prisoner focus group 3]*

5.11.2 Selling the benefits

The staff participants were much more positive than the prisoner participants regarding staff buy-in, with most perceiving there to be little likelihood of prison or healthcare staff negating attempts to embed the intervention in the prison environment. However, some of the senior prison staff members interviewed did concur with prisoner participant views that small cohorts of prison staff may be reluctant towards the extra work that the peer-intervention may bring for them. However, it was apparent they felt that such would be very easily overcome through selling the benefits of the intervention to the staff and the prison overall. This advertisement of the benefits of the intervention beyond the recipients was felt to be crucial to these senior staff member participants in successfully embedding the intervention into the prison environment.

> *"It is about explaining the benefits of it. Everybody, I know I'm being taped…most people, not everybody, if they can see what the benefit is for them, they are more likely to buy into it" [Interview 2 – prison staff member]*

> *"We need to sell the benefits of a peer-led intervention to those staff, because without their support, it could fail" [Interview 8 – prison staff member]*

What was note-worthy during some of the interviews with staff was their perception that the impending introduction of the smoking ban across the prison estate may actually lead to enhanced buy-in from staff at all levels, from prison officers right up to the governing Governor.

> *"I think staff would be fine with it, I think even more so because we're all well aware that this smoking ban is going to be implemented" [Interview 10 – healthcare staff member]*

> *"For something like this, that's promoting health, and particularly with the no smoking ban coming in, I think it'd be in [the Governor's]*

interests to support something like this, you know, to put something in place for them" [Interview 4 – prison staff member]

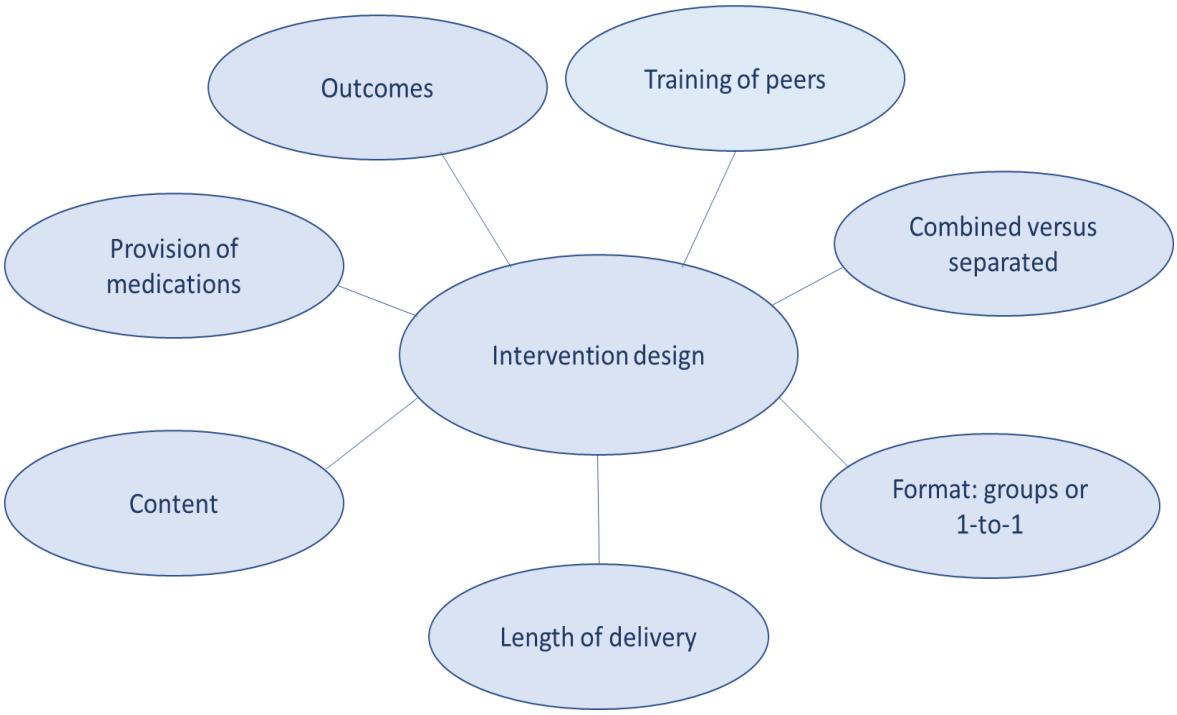
5.11.3 Theme summary

In this theme, participants discussed the potential lack of buy-in to the intervention by staff, and possible measures to address such lack of buy-in. Different rationale for prison officer resistance was suggested, with some prisoner participants suggesting prison staff may be resistant to the intervention purely through a lack of caring, while other prisoner and staff participants suggested resistance stemmed from changes to prison officers' work routine as a result of needing to facilitate the intervention. The senior members of prison staff highlighted the need to advertise the benefits of the intervention to the wider prison, in order to gain the co-operation of prison officers and ultimately ensuring the success of the intervention.

5.12 Intervention design – the specifics

As mentioned at the beginning of this chapter, in addition to participants' generic views towards the NCD risk-behaviours and the development of a peer-led intervention to modify NCD risk-behaviours among prisoners, very specific design features of the intervention were explored with participants such as its content, format and length of delivery. The remainder of this chapter presents a synthesis of the suggestions put forth by participants pertaining to intervention design. Figure 5-1 highlights the different aspects of intervention design that were explored with participants and which are discussed.

Figure 5-1: Summary of specific intervention design aspects explored with participants



5.12.1 Training of peers

Both the prisoner and staff participants highlighted the need for the peer-worker training to cover sufficiently the topics of smoking cessation, healthy diet and healthy levels of physical activity, to enable peer-workers to be comfortable in the intervention that they will ultimately be delivering to their prisoner peers. Both the prisoner and staff participants suggested training the peer-workers in the 'basics' of each topic in-depth, to enable them to answer the lower level queries they would most often be faced with when supporting prisoners change their behaviour.

> *"You could do an initial package, wouldn't you, to train them up so they know the basics" [Prisoner focus group 3]*
>
> *"So he needs, I would start off with, they need to do basic courses, the basic smoking course…I would imagine that there's something similar for healthy eating and exercise, getting that basic information to relay to the people on the course" [Interview 6 – healthcare staff member]*

Although suggesting training peer workers on the 'basics' of each topic, some of the prisoner and staff participants expressed concern about the selected peer-workers' ability to absorb and retain the vast amount of information that would inevitably need to be covered to enable them to answer queries they would most often be faced with by their prisoner peers. Indeed, this led to suggestions such as having a peer specialising in each topic, and provision of training materials for peer-workers to take away to be able to reflect on and remind them of the training content.

> *"Then again with the gym and sort of stuff, realistically you'd need someone different. Because for a lot of people in here it would be a lot of information to learn in a short period of time, to then deliver to others. If there's one about diet, one about exercise, and one about smoking cessation, it's quite a lot of information that they'd need to know…to be able to advise other people on it" [Prisoner focus group 3]*

> *"But I think if you're passing the information over and you're using your aids, so if they forget or if they've not wrote it down properly, then they've got the aids there so they can always resort back to any resources or paperwork that you've given them" [Interview 9 – healthcare staff member]*

It was universally suggested by the prisoner participants that the training for peer-workers be ongoing, with peer workers regularly provided with refresher training during which new updates could be relayed to them.

> *"Then it would be an ongoing process that every time you had the peers down for the monthly meeting, you could then do like a little refresher" [Prisoner focus group 3]*

> *"Keep updating new information and stuff like that, every month" [Prisoner focus group 2]*

5.12.2 Intervention combined versus separated

Most of the staff participants interviewed felt that it would be very difficult to have one overall peer-led intervention looking to modify all three NCD risk-behaviours. They talked about how, if the intervention was combined to focus on all three risk-behaviours, prisoners may be discouraged from participating as they may not necessarily want to address all three risk-behaviours. It was apparent from their responses that they tended to view healthy diet and physical activity as being very closely linked, however, smoking was deemed to be quite separate from these. As a result, they consistently referred to how the intervention would need

to be separated into two; one focussing on smoking, and one on diet and physical activity.

> *"Someone might want to stop smoking but not particularly bothered, they already eat quite healthily and go to the gym. Or someone might not want to stop smoking but quite like to…improve their fitness and stuff" [Interview 3 – prison staff member]*

> *"They're very closely linked…and you tend to find that people who are active actually eat healthier, and people who eat healthier are generally more active" [Interview 2 – prison staff member]*

> *"I'd keeping smoking separate, personally, and maybe the healthy eating and the exercise could go hand in hand" [Interview 4 – prison staff member]*

In contrast, the prisoner participants felt differently. Instead they expressed a preference for the intervention to be combined, focussing on all three risk-behaviours. This was primarily due to the fact that they perceived smoking cessation to be linked with weight gain, and therefore felt that the intervention would need to mitigate against the potential weight gain associated with smoking cessation through encouraging intervention recipients to eat healthier and undertake more physical activity. The prisoner participants that had previously attempted to stop smoking in particular discussed this extensively, describing how they struggled to deal with the increases in weight they experienced when trying to stop smoking.

> *"That is the problem I had last time…I stopped smoking for nearly three months but I put on nearly two stone because the food was that bad and I was eating a bit more because I wasn't smoking" [Prisoner focus group 3]*

> *"If it was altogether you could sort of do the smoking side of it, encourage people to eat better so they're not getting overweight from eating more, and get people being active and training" [Prisoner focus group 2]*

5.12.3 Format: groups or one-to-one

When discussing the potential format of the proposed peer-led intervention, prisoner and staff participants talked extensively about the benefits of group support, and how group interventions tend to work particularly well in the prison environment. They remarked how being in a group of other people also trying to modify their behaviour gives a sense of not feeling alone, with the different members of the group on hand to support and encourage each other through the

behaviour change process. Participants also talked about group interventions in terms of providing learning opportunities, with the different group members perceived to be able to share stories with one another regarding what has worked for them and how they have managed to successfully achieve behaviour change.

> *"It's only afterwards you realise, or I realised, and I'm sure that you've done same, that would you have done it as well on a one-to-one without that group support, and how much help do you get from the peer group. And also you realised they worked together" [Prisoner focus group 1]*
>
> *"You're sitting and talking in front of other people who are like you and trying to change" [Prisoner focus group 2]*
>
> *"I think when they've got other people's involvement, I think, sort of, they get ideas off other people" [Interview 9 – healthcare staff member]*

Although both prisoner and staff participants appeared to appreciate the value of group support, they did remark that not all prisoners would necessarily be comfortable in participating in groups, and may instead prefer one-to-one support. In light of this acknowledgement, there was a general consensus among the prisoner and staff participants that the proposed intervention should offer the opportunity of group and one-to-one support, with the individual recipients being able to make informed choices as to which of these types of support they would like to receive. The provision of one-to-one support in addition to the groups was also felt to be advantageous, as participants viewed this as an opportunity for recipients to receive extra support if they were particularly struggling.

> *"Researcher: You mean groups and one-to-one?*
>
> *Participant 1: Yeah. [Name] might be more comfortable talking about his issues to a group whereas [Name] might not and want to speak to the worker on his own" [Prisoner focus group 3]*
>
> *"Researcher: So you said group sessions and then you said one-to-one on the wings, so that is kind of what the prisoners had suggested…*
>
> *Participant: Well obviously I would imagine, I don't know how many they're going to have on the wing, but they're there on that wing to support them if they're, when they're having problems on a day-to-day basis, well that's what they're there for isn't it" [Interview 4 – prison staff member]*

5.12.4 Length of delivery

Participants very much felt that the proposed peer-led intervention be something that provides recipients of the intervention with ongoing and continued support. They discussed length of delivery in terms of having a set time-frame for the weekly group sessions run by the peer, with suggestions for length of group sessions varying from six to twelve weeks. These suggestions seemed to be based upon the knowledge of participants regarding the length of delivery of existing health behaviour change courses and the length of the smoking cessation medication courses. Regarding the latter, they felt that the groups should mirror the length of any prescribed smoking medication course, which in the prison environment varies from eight to twelve weeks.

> *"Well that's how long the patches and all that last for, isn't it, twelve weeks" [Prisoner focus group 1]*

> *"Past courses, like the smoking cessation group or the music group, they usually go on for roughly six to eight weeks" [Interview 12 – healthcare staff member]*

However, participants consistently referred to ongoing and continued support being provided after this initial time-frame, either through the recipients being able to refer back to the group sessions, or being able to seek one-to-one support from the peer-workers. This primarily stemmed from their feelings that behaviour change can be difficult to achieve in the prison environment, and that recipients may need further support if they are struggling in their attempt to sustain behaviour change.

> *"It could be a set time, somebody does the course but then if somebody was struggling, they could come back in for a week or something" [Prisoner focus group 3]*

> *"Something like a ten week period and then prisoners can self-refer back if they need further help" [Interview 8 – prison staff member]*

5.12.5 Content

The participants primarily viewed the peers delivering the proposed intervention as having a dual role consisting of both support and educational functions. In terms of education, both prisoner and staff participants remarked how the peers delivering the group sessions could educate and advise recipients about how to live a healthy lifestyle while in prison, such as for example through discussion of

the healthier options available to prisoners on the menu and the canteen, and the potential coping mechanisms to deal with smoking cessation in prison. This focus on education was unsurprising from the point of view of the staff participants, as they had previously discussed how they felt that prisoners lacked the basic knowledge about healthy lifestyles, something that was discussed earlier in this chapter (see section 5.4.4.2).

> *"You can educate the people with different techniques, different ways that will suit them that they can connect to that they think would be best suited to them" [Prisoner focus group 2]*

> *"I think advice is always the best thing for diet and physical activity. We get a lot of people, I do the Wellman screenings here and we do the bloods for diabetes and cholesterol and all that sort of thing, and a lot of people are actually surprised if they've got raised cholesterol and they say 'why is that?' and 'what do I need to do?', and, so I think just basic advice on…diet is a good place to start, because a lot of people don't have that basic knowledge, so just informing them" [Interview 9 – healthcare staff member]*

In addition, both prisoner and staff participants talked extensively about how the peers should provide support to recipients through the behaviour change process. However, rather than taking place within the group setting, they discussed the support from the peer-worker more in terms of something that is provided on a one-to-one basis with recipients. For example, they often made reference to recipients being able to have one-to-one discussions with a peer-worker on the wing if they felt like they needed further support, or if they were going through a particularly difficult period. They remarked how they felt that there should be at least one or two peer-workers per prison wing to be on hand to provide this pivotal support to recipients if they were struggling in any way over the period of the intervention delivery.

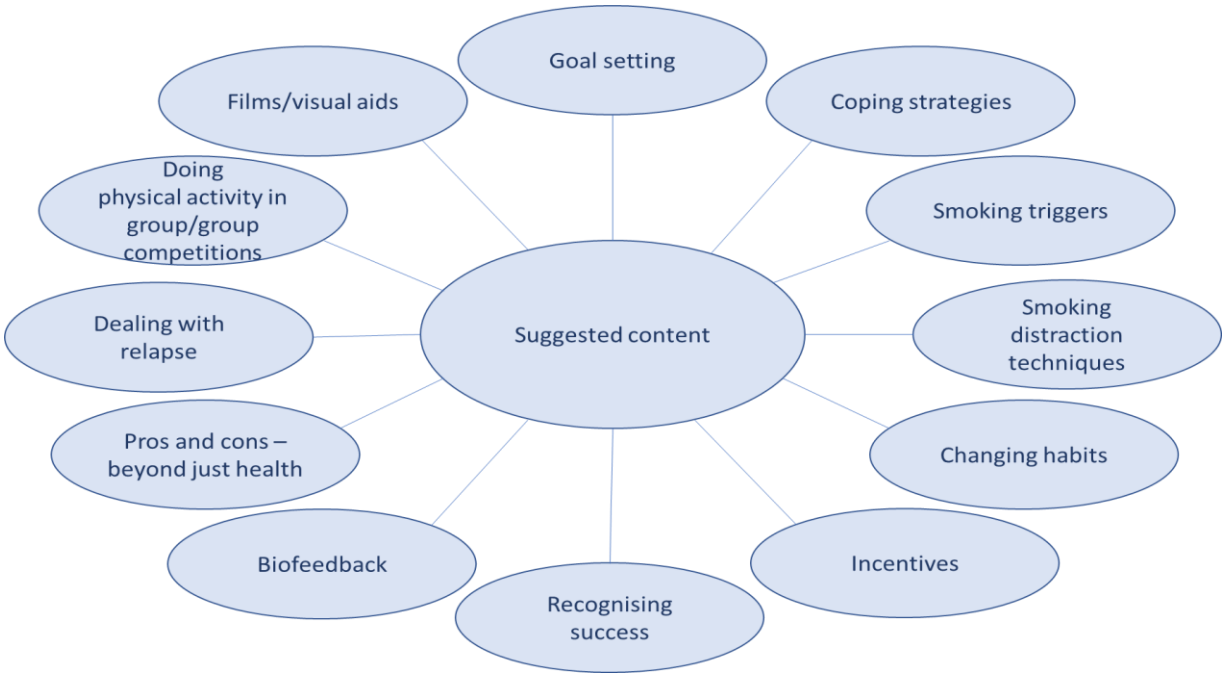
> *"They're there on that wing to support them if they're, when they're having problems on a day-to-day basis, well that's what they're there for isn't it" [Interview 4 – prison staff member]*

> *"If you've got that person on that wing, sort of ongoing support, like a Listener as such, pull them away for ten minutes and have a chat with them" [Prisoner focus group 3]*

As well as these generic views regarding content, participants also discussed very specific aspects that they thought should be included in the intervention

group sessions. These very specific and frequently mentioned content suggestions are displayed in Figure 5-2.

Figure 5-2: Content suggested to be included in the peer-led intervention



Interestingly, when discussing aspects pertaining to the content of the peer-led intervention, the prisoner participants from all three of the focus groups focussed much more on the content pertaining to smoking cessation than they did on content related to physical activity and dietary change, with the same being true for a small proportion of the staff participants also. This apparent focus on smoking cessation may be explained by the findings discussed earlier in this chapter regarding participants' views that capacity and financial constraints severely restrict prisoners' ability to attend the prison gymnasium and be provided with healthy diet choices, thus inhibiting their ability to change.

5.12.6 Provision of medications

Participants felt strongly that smoking cessation medications be provided alongside the peer-led intervention to those recipients wanting to be prescribed such medications to aid them in their stop smoking attempt. They described how they perceived stopping smoking to be particularly difficult in the prison

environment and thus felt that an all-out approach involving behavioural support and medications should be delivered to recipients of the intervention. Some participants went so far as to state that they felt prisoners would be unable to cease smoking in the prison environment without the provision of smoking cessation medications and just the peer-led behavioural support on offer.

> *"Participant 1: They'd definitely need patches and that alongside.*
>
> *Participant 2: You wouldn't be able to stop without the help of meds" [Prisoner focus group 1]*
>
> *"Researcher: OK. And with this being a peer-led intervention, could we still provide NRT alongside?*
>
> *Participant: I think you would have to because, I've never smoked, but I don't think for one second it's easy to give up if you have, and to just expect people to give up and not reduce that gradually, I think for a lot of individuals would be just too hard" [Interview 7 – prison staff member]*

Both prisoner and staff participants highlighted that if stop smoking medications were provided as suggested, then these medications would need to be provided consistently to participants over the course of the intervention. This importance placed upon consistency primarily stemmed from participants perceptions discussed earlier, that previous smoking cessation interventions have failed in the consistent provision of smoking cessation medications (see section 5.4.1.5).

> *"There needs to be continued access to their prescribed meds with no gaps, if there's going to be big gaps it'll just crash and burn" [Interview 5 – healthcare staff member]*

5.12.7 Outcomes

Participants very much viewed success of the peer-led intervention as being goal dependent. They felt that the onus should be on the recipients to set their own individual goals at the outset of the intervention, and success be measured by whether or not the recipients meet these set goals. Participants further explained that it would be unrealistic to set blanket goals in relation to smoking, diet and physical activity that all recipients should aim to achieve, as such blanket goals would not necessarily be applicable, or appropriate, for all recipients.

> *"Them achieving their goals of what they want to go in for…if they've got out of it what they want to get out of it, then I'd see that as a success" [Interview 9 – healthcare staff member]*

"Participant 1: It's not like you can say each person has to lose three stone whilst on the thing. So there's got to be some kind of…

Participant 2: Goal-setting.

Participant 1: Goal-setting for just on the one-to-one basis and achieving the goals" [Prisoner focus group 1]

Although suggesting that success would be goal dependent, throughout the focus groups and interview discussions, participants did express what they would perceive as suitable goals and outcomes for the proposed intervention. With regards to smoking cessation, this discussion was epitomised by conflicting views as to whether or not reducing the number of cigarettes smoked is as successful as stopping smoking completely. For most participants, there was a feeling that cutting down the number of cigarettes smoked is not good enough and that full smoking cessation should be the one and only aim of the intervention. The primary rationale behind why participants felt this was due to their beliefs that cutting down is not an effective way of stopping smoking, and would also not reduce the health risks to recipients or others around them.

"Fully stopping. Cutting down doesn't decrease or diminish the risks of smoking or the harmful effects of second-hand smoking does it" [Interview 8 – prison staff member]

"I don't think you can cut down. I don't think you can cut down smoking, because you're cutting down, and you're cutting down and you're still feeding that habit aren't you" [Prisoner focus group 2]

While most participants did perceive fully stopping to be a more appropriate goal than reducing the number of cigarettes smoked, there were a small number of participants who felt differently, and perceived cutting down to be just as appropriate as fully stopping. For these participants, there was an acknowledgement that not everybody would necessarily be at the stage where they can fully stop their smoking behaviour, and for these individuals in particular, cutting down would be an enormous achievement. Additionally, they felt that successfully being able to reduce the number of cigarettes smoked over the intervention period may actually put recipients in good stead in the future when they feel more able to fully cut smoking behaviour out completely.

"I mean cutting down is fantastic…it might be a bit like methadone, you cut it right down and maintain it for a while, and then maybe look at it again and probably give up completely" [Interview 12 – healthcare staff member]

"If [Name] is going through three ounces of baccy a week, and now he's going through an ounce of baccy a week, I would consider that an extreme reduction. Or going from thirty-six a day to ten a day. All of that is reduction, and that's positive. If he's managed to reduce it, there's nothing stopping taking a break and then coming back, and taking the full and final plunge into stopping" [Prisoner focus group 1]

Interestingly, proposed outcomes regarding diet were primarily only suggested by the staff participants, and consisted of suggestions such as weight loss if applicable, and better awareness of healthy diet as opposed to prisoners actually physically changing their diet to be more healthy. Regarding this latter point, the staff participants talked primarily in terms of recipients of the intervention being more educated around healthy diet and how they felt that this may help them to make more informed choices from the prison menu, with very little reference to recipients actually changing their behaviour and choosing healthier options from the menu.

"Just having a better understanding of food and what it does to you, how different foods do different things to you" [Interview 3 – prison staff member]

"Happy that they've now got the basic knowledge as well, 'I know that I shouldn't be eating that and I know that I can eat that', and they're more informed, then I would probably say that is probably a success" [Interview 9 – healthcare staff member]

In contrast, the prisoner participants did not suggest any outcomes pertaining to diet, and this primarily stemmed from their beliefs discussed earlier in this chapter that the diet in prison is limited, with a perception that the prison will not change to encourage healthier menu choices due to budgetary constraints.

"Researcher: So you can't really look, you can't really say what sort of outcomes would be good in terms of diet then, because…

Participant 1: More varied and healthy menu choices.

Participant 2: But that would depend on whether kitchens provided us with that.

Participant 3: Yeah which they won't because of finance" [Prisoner focus group 2]

Given that this scepticism was echoed by the staff participants, this may help to explain why they only discussed dietary outcomes in terms of being better educated as opposed to actual behaviour change.

When discussing suitable outcomes pertaining to physical activity, both prisoner and staff participants referred to increased physical activity levels post-intervention via increased use of the prison gymnasium or the prison exercise yard. They also remarked that they would expect recipients to be fitter at the end of the intervention, suggesting that recipients should display greater endurance when undertaking physical exercise.

> *"Participant 1: Maybe look at people taking part in gym sessions, or at least going out on exercise if they didn't before, and things like that.*
>
> *Participant 2: Yeah, people going to the gym or using the yard more" [Prisoner focus group 1]*
>
> *"Say you started at week one and they could only manage five minutes on the treadmill, but by week 12 they were managing half an hour, that in itself is a success isn't it" [Interview 5 – healthcare staff member]*

Although not directly related to the NCD risk-behaviours under exploration and the focus of the proposed peer-led intervention, many of the staff participants in particular felt that better wellbeing and an increased sense of worth would be something that they would expect to see as a suitable outcome of the intervention. They described how, generally speaking, people that change their lifestyle to become more healthy tend to see benefits in terms of how they look and how they feel in themselves, and thus may be an extra benefit to the recipients of the proposed intervention.

> *"Researcher: What do you mean by better in themselves?*
>
> *Participant: Like feeling more positive in themselves. I think when you've stopped smoking, you feel healthier, and if you're exercising then you feel better, you are a bit more positive aren't you and you feel better in yourself" [Interview 4 – prison staff member]*
>
> *"You could ask people how they feel their health has improved, rather than from a medical point of view, it could be from an individual's perception of their health and wellbeing and how they think about themselves" [Interview 7 – prison staff member]*

In terms of measuring the outcomes discussed above relating to smoking, diet and physical activity, participants suggested a combination of different measures. Participants felt that recipients should be asked about their behaviour over the course of the intervention; at the start, part way through and on completion of the intervention. For example, they made reference to asking recipients to self-report whether or not they were smoking, what diet choices they had been ordering from

the menu and from the canteen list, and their levels of exercise. They also referred to participants self-reporting on their wellbeing over the course of the intervention to monitor whether or not this altered over the course of the intervention.

> *"Participant 1: Well you'd just ask people, wouldn't you?*
>
> *Participant 2: Yeah, you'd ask them what they were like at the start and what they were like at the end" [Prisoner focus group 1]*
>
> *"It's going to be the survey of your prisoners taking part in the course isn't it" [Interview 8 – prison staff member]*

As well as asking recipients to self-report on the outcomes of interest, many of the staff participants in particular also suggested the use of more objective measures, such as CO monitoring and regular weight checks. This suggestion appeared to stem from the fact that such measures have been used in previously existing smoking cessation and weight management programmes conducted in the prisons. A small number of the prisoner and staff participants also eluded to the suggestion that such objective measures may be needed alongside self-report to determine whether or not recipients have been truthful when self-reporting their behaviour, particularly with regards to their smoking behaviour.

> *"I mean we see people, every time we see people for long-term conditions, especially diabetics, you know, I'll say 'have you been exercising', 'yeah', 'right jump on the scales for me' and I'd…I record their weight" [Interview 1 – healthcare staff member]*
>
> *"Participant 1: If you did just ask if they'd stopped smoking at the end, people might not be honest with you.*
>
> *Participant 2: They'll say they've stopped smoking when they haven't" [Prisoner focus group 1]*

5.13 Chapter summary

This chapter has presented the results of the phase one qualitative focus groups with prisoners and one-to-one interviews with prison and healthcare members of staff. The thematic analysis conducted by the researcher generated eight overarching themes, which included; non conducive prison environment, scepticism, positive views towards prison peer-led interventions, peer-led interventions in prison – the downfalls, success dependent on peer, managing risks, prison regime impact and increasing staff buy-in. The chapter also

presented the synthesis of findings pertaining to the very specific suggestions regarding intervention design such as the training of the peer-workers, format of intervention delivery, content of the intervention sessions and length of intervention delivery. These specific design suggestions, along with the eight overarching themes generated by the researcher, were utilised to inform the development of an appropriate peer-led intervention to modify the NCD risk-behaviours of prisoners. The following chapter describes in detail the development of the peer-led intervention at each of the two prison sites, and how the results of this phase one stage informed development decisions.

Chapter 6 Intervention Development and Recruitment, Selection and Training of Peer-Workers

6.1 Introduction

Phase one of the research was dedicated to gathering information required to develop an appropriate and acceptable peer-led intervention to modify NCD risk-behaviours among prisoners. This chapter details how the findings of the phase one study were used to develop the intervention. The chapter begins with a critical discussion of the behaviour model and theoretical framework used to design the peer-led intervention. The chapter then details how the main content and mode of delivery of the intervention were decided upon using selected theory and the findings from the phase one qualitative study. The chapter concludes with a detailed presentation of how the peer-workers were selected in each of the two prison establishments, and the training provided to them to enable them to undertake the role.

6.2 Developing the peer-led intervention

Upon completion of phase one, the results of the qualitative study were considered by an advisory steering group led by the researcher's external advisor and of which the researcher was an active member. The function of this advisory group was to develop the peer-led intervention for phase two of the study. The external advisor and steering group led the development of the intervention, as they had previous experience of working with prisoners, and service users in the community, to support behaviour change, particularly in the areas of smoking, diet and physical activity. The development of the intervention involved input from a multi-disciplinary team involving the external advisor, healthcare practitioners working in both prisons, and the researcher. Given the design of the intervention was not a piece of work conducted individually by the researcher, only a brief summary of the development of the intervention is given here to provide the

reader of this thesis the context of how the findings from the phase one qualitative work were used to inform the development of the intervention.

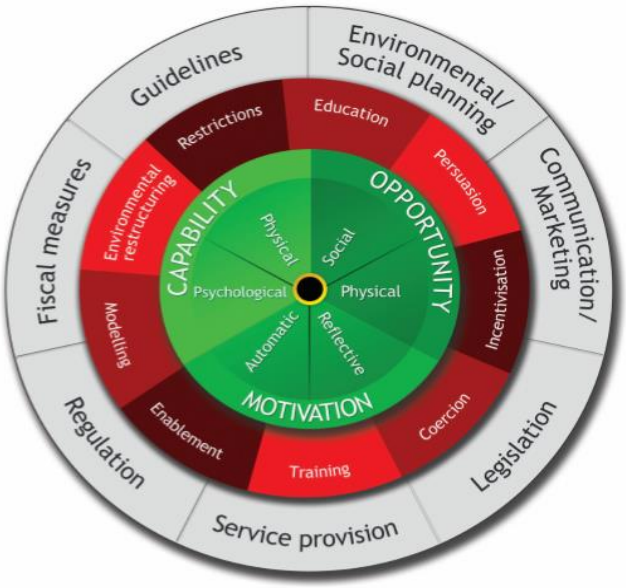
6.2.1 Choosing a theoretical framework to guide the design

The use of appropriate behaviour change theory to inform the development of behaviour change interventions is highly recommended in the Medical Research Council (MRC) guidance pertaining to the development and evaluation of complex interventions (Craig et al., 2008). The advisory steering group chose the COM-B model of behaviour and corresponding Behaviour Change Wheel (BCW) framework developed by Michie et al. (2011; 2014a) to guide the design of the peer-led intervention for phase two of the PhD project. A brief description of the COM-B model and BCW is provided first, followed by the rationale for why these were selected to aid in the design of the intervention.

The COM-B model of behaviour posits that behaviour is influenced by three interacting components; capability, opportunity and motivation, with behaviour in turn influencing each of these components. This model sits at the centre of the BCW and is diagrammatically presented in Figure 6-1 (COM-B represented by the green components). The COM-B model proposes that for a given behaviour to occur, individuals must have the psychological and physical capability to carry out the behaviour, be provided with physical and social opportunities to partake in the behaviour, and must be motivated to engage in the behaviour. Michie et al. (2011) posit that this latter component includes both reflective motivation, based on rational and analytical choices, and automatic motivation in response to emotional cues and habituation. In order for behaviour change to occur, changes are required to one or more of capability, opportunity and motivation. Michie et al. (2011) suggest that nine intervention functions and seven policy categories exist that may potentially be used to modify an individual's capability, opportunity or motivation; these form the two outer layers of the BCW in Figure 6-1. The identification of these particular intervention functions and policy categories were based upon a rigorous, comprehensive synthesis of 19 pre-existing behaviour change frameworks published in the behaviour change literature (Michie et al., 2011). Through conducting a behavioural analysis of the target behaviour the focus of an intervention, intervention designers can then identify which of the

COM-B components need to be modified in order to encourage behaviour change, and use the BCW to identify relevant intervention functions and policy categories to encourage such change (Michie et al., 2014a).

Figure 6-1: The Behaviour Change Wheel*



*Reproduced with permission of Michie et al. (2014a)

The selection of COM-B and the BCW to guide the intervention design were based on the following rationale. The COM-B model of behaviour was deemed to be more appropriate than some of the more traditional models of behaviour frequently cited in the behavioural change literature, such as the Health Belief Model, the Theory of Planned Behaviour and the Transtheoretical Model, with these traditional models frequently criticised for not taking into full consideration the potential influences of external social factors and unconscious thought processes on behaviour (Coulson et al., 2016; Michie et al., 2011; Michie et al., 2014b; Taylor et al., 2006). In contrast, the COM-B model places a high degree of importance on the potential influences of environmental factors and automatic processes (Michie et al., 2011; 2014a). It was important that the model of behaviour used to guide intervention design for the phase two study considered fully the influence of environmental factors and automatic processes, as the phase one qualitative interviews and focus groups identified these to be important factors in prisoners participation with the NCD risk-behaviours. For instance,

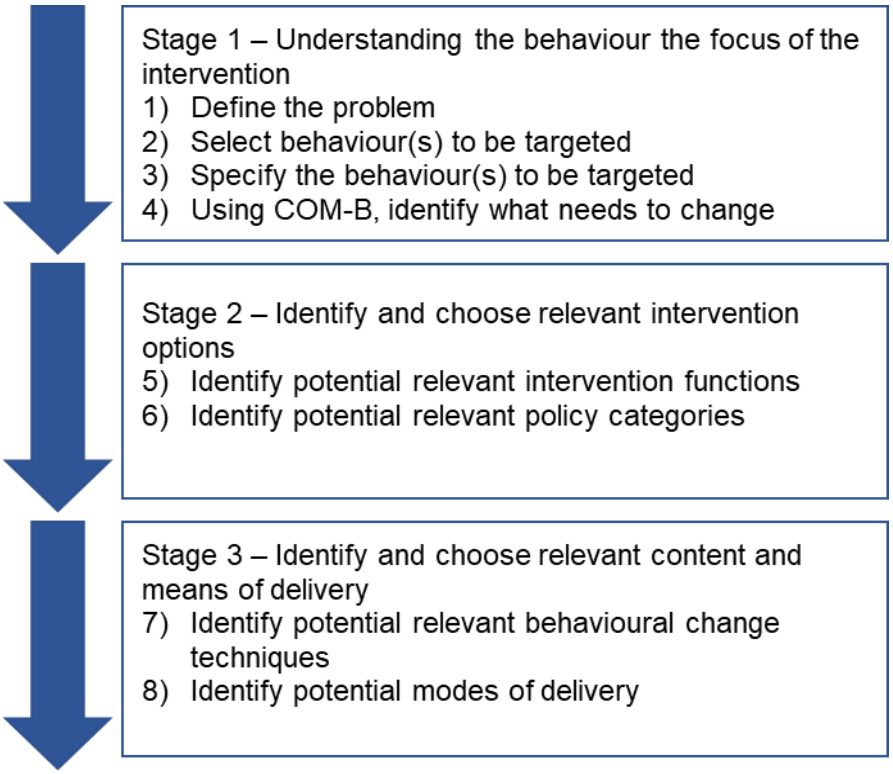
smoking was very much felt to be an emotional response to the stressful prison environment, while smoking, poor diet and lack of physical activity, and unhealthy lifestyles more generally, were suggested by participants to be habitual behaviours ingrained in prisoners lifestyles. Similarly, both the prisoner and staff participants identified numerous physical and social limitations specific to the prison environment, which could potentially negate prisoners attempts to desist from engaging in NCD risk-behaviours.

In addition to the COM-B model, the BCW framework was used to guide the design of the intervention. This framework was chosen due to its many benefits. Firstly, it is a comprehensive framework incorporating intervention functions and policy categories that were identified from analysis of 19 pre-existing behaviour change frameworks, and thus is inclusive of the many intervention functions and policy options available to encourage behaviour modification (Michie et al., 2011). In comparison, not one of the existing frameworks identified during the review by Michie et al. (2011) included all of the possible intervention functions and policy options. Secondly, due to its comprehensiveness, it encourages those involved in the design of interventions to consider all of the potential intervention functions and policy categories that may be incorporated into an intervention to encourage behaviour change (Michie et al., 2014a). Finally, there is evidence that the framework has been used systematically to successfully develop interventions for both patients and healthcare clinicians delivering services to patients in other areas (Barker et al., 2016; Connell et al., 2015; Webb et al., 2016).

6.2.2 Using the COM-B and BCW to design the peer-led intervention

The eight step process of the BCW, which is diagrammatically presented in Figure 6-2 below, was followed by the advisory steering group to develop the peer-led intervention.

Figure 6-2: BCW steps followed to design the intervention



Steps one to three identified that in order to reduce the prevalence of NCD risk-behaviours among prisoners, specific targets regarding their smoking, diet and physical activity behaviour needed to be set as the focus of the intervention. Based upon the findings of the literature review, and the findings of phase one, the intervention aimed to achieve the following;

- help prisoners fully cease their smoking behaviour
- help prisoners increase their physical activity levels so they are more in line with current recommended guidelines of 150 minutes or more of moderate physical activity per week
- help prisoners improve their eating behaviours so again their dietary intake would be more in line with current recommendations

In order to understand what needed to change for prisoners to achieve these target behaviours (step four), the findings from the phase one qualitative study were used to perform a behavioural diagnosis. This involved mapping the barriers and facilitators to achieving the target behaviours, identified during the phase one

focus groups and interviews, to the relevant COM-B components; the results of this mapping exercise are presented in the first three columns of Table 6-1. This exercise identified that the following COM-B components required modification to encourage NCD risk-behaviour change among prisoners; capability (psychological), opportunity (physical and social) and motivation (automatic and reflective).

Conducting the aforementioned mapping exercise then allowed the advisory steering group to identify the potential intervention functions which may be utilised to encourage change in the relevant COM-B component from the nine intervention functions available; education, persuasion, incentivisation, coercion, training, restriction, environmental restructuring, modelling and enablement (step five). When reviewing these potential intervention functions that could be incorporated, and deciding upon which to include in the intervention, it was important that functions were chosen that were appropriate for the particular context in which behaviour change was being encouraged (i.e. among prisoners in the prison environment) (Atkins, 2016). Michie et al. (2014a) propose that judgement of appropriate intervention functions for a particular context can be guided through utilisation of the APEASE criteria, which asks the following questions;

- Affordability: Can this intervention function be delivered within the specific budget allocated to develop/implement the intervention?
- Practicability: Can this intervention function be delivered in full as intended to the target audience of the intervention?
- Effectiveness/cost-effectiveness: Is the intervention function likely to lead to meaningful behaviour change among the target audience and is the cost to effect ratio suitable?
- Acceptability: Is the intervention function likely to be acceptable to key stakeholders (i.e. target audience, intervention deliverers, policy-makers)?
- Side-effects/safety: Is there a likelihood of the intervention function leading to any unwanted/negative side-effects?
- Equity: Will the intervention function likely increase or decrease inequalities in living standards, wellbeing or health among different sectors of society?

This criteria was used by the advisory steering group to judge the appropriateness of each of the intervention functions available to modify the COM-B components requiring change from the behavioural analysis, and thus guided the final decisions as to which intervention functions to incorporate into the peer-led intervention. An example of this is as follows. During the focus groups and interviews, it was evident that smoking was a habitual behaviour for many prisoners, and thus acted as a barrier to cessation. Mapping this barrier to the COM-B model of behaviour identified that in order to encourage behaviour change, prisoners automatic motivation would need to be modified. The BCW proposes the following intervention functions as being potentially appropriate to modify automatic motivation; persuasion, incentivisation, coercion, training, environmental restructuring, modelling and enablement.

Each of these functions were considered by the advisory steering group. It was decided that persuasion, incentivisation, training, modelling and enablement each met the APEASE criteria, and would be appropriate functions in light of the intervention context. The functions environmental restructuring and coercion were both deemed to be impracticable, with the latter also unacceptable, and thus were discounted as potential intervention functions to modify prisoners automatic motivation in relation to smoking as a habit. The review of and final selection of intervention functions are displayed in the fourth column of Table 6-1. Step six of the BCW was not undertaken as the advisory steering group were unable to influence policy relating to the target behaviours in the prison environment.

Table 6-1: Table documenting development of intervention through the BCW steps

Findings from phase 1 regarding barriers/facilitators to target behaviours	Relevant COM-B component identified in relation to findings	Specific change required	Potential intervention functions relevant to COM-B component to facilitate recommended change and whether or not these meet the APEASE criteria (Yes or No)	Chosen BCTs based upon meeting the APEASE criteria (numbers correspond to specific BCT number)
Smoking a coping mechanism to deal with stress and boredom	Capability – psychological	Improve skills of prisoners to cope with stress and boredom instead of turning to smoking	Education - Yes Training - Yes Enablement - Yes	1.2 Problem solving 1.4 Action planning 3.1 Social support – unspecified
Smoking a habit	Motivation – automatic	Smoking is a part of prisoners routine in prison. Breaking this habit is required through for instance replacing their smoking habit with a more positive behaviour	Persuasion - Yes Incentivisation – Yes but verbal praise only Coercion - Not practicable as there are no options to coerce in this context, also would not be acceptable Training - Yes Environmental restructuring – Not practicable as there are no options to influence prison environment to change to encourage change in habits Modelling - Yes Enablement - Yes	8.4 Habit reversal 8.2 Behaviour substitution 2.3 Self-monitoring of behaviour 12.3 Avoidance/reducing exposure to cues for the behaviour 10.4 Social reward 6.1 Demonstration of behaviour

Table 6-1 continued: Table documenting development of intervention through the BCW steps

Surrounded by smokers which influences smoking	Opportunity – social	Prisoners smoking behaviour is influenced by seeing others around them smoke, such as cell mates and friends. Prisoners need to reduce their exposure to such smoking cues to smoke	Restriction – Not practicable, no options to restrict in this context Environmental restructuring - Yes Modelling – Not practicable, no options to model in this context Enablement – Not practicable, no options to enable in this context	12.2 Restructuring the social environment 12.3 Avoidance/reducing exposure to cues for the behaviour
Provision of smoking cessation medications alongside the peer-intervention will aid cessation	Opportunity – physical	Smoking cessation perceived to be difficult in prison environment. Participants suggested the peer-intervention include all forms of support available, including the provision of smoking cessation medications	Training – Not practicable, no options to train in this context Restriction – Not practicable, no options to restrict in this context Environmental restructuring - Yes Enablement - Yes	11.1 Pharmacological support
Limited smoking distraction techniques	Opportunity – physical	Distraction techniques are limited in prison. Prisoners need to be provided with more, or be made more aware of, opportunities to distract themselves that can be enacted in a prison environment	Training - Yes Restriction – Not practicable, no options to restrict in this context Environmental restructuring – Not practicable, unable to change prison environment/regime to afford more distraction options Enablement - Yes	1.2 Problem solving 1.4 Action planning 8.2 Behaviour substitution

Table 6-1 continued: Table documenting development of intervention through the BCW steps

Limited smoking cessation support on offer	Opportunity – physical	Limited smoking cessation support is available to prisoners. More support needs to be provided. Increased support being provided through the peer-led intervention	Training – Not practicable, no options to train in this context Restriction - Not practicable, no options to restrict in this context Environmental restructuring – Not practicable, no options to restructure the environment in this context Enablement – Yes, through peer-led intervention	3.1 Social support – unspecified
Lack of physical activity opportunities in prison	Opportunity – physical	Physical activity opportunities are limited in prisons. More opportunities for prisoners to engage in physical activity, such as increased gymnasium access, is required	Training – Not practicable, no options to train in this context Restriction – Not practicable, no options to restrict in this context Environmental restructuring – Not practicable to change the prison environment/regime to afford prisoners more physical activity opportunities Enablement - Not practicable to change the prison environment/regime to afford prisoners more physical activity opportunities	Very little can be done to address this issue

Table 6-1 continued: Table documenting development of intervention through the BCW steps

Lack of healthy diet choices for prisoners to choose from	Opportunity – physical	Limited healthy food options are available to prisoners. More healthy options need to be provided and less unhealthy options	Training – Not practicable, no options to train in this context Restriction – Not acceptable to restrict the food available for prisoners to choose from Environmental restructuring – Not practicable to change the prison kitchens/canteen Enablement - Not practicable to change the prison kitchens/canteen	Very little can be done to address this issue
Lack of group competitions which can motivate engagement with physical activity	Opportunity – physical	Group physical activity competitions are limited in prisons. More opportunities for prisoners to engage in these activities are required	Training - Not practicable, no options to train in this context Restriction - Not practicable, no options to restrict in this context Environmental restructuring - Not practicable to change the prison environment/regime to afford prisoners more group competition opportunities Enablement - Not practicable to change the prison environment/regime to afford prisoners more group competition opportunities	Very little can be done to address this issue

Table 6-1 continued: Table documenting development of intervention through the BCW steps

Focus on weights rather than cardiovascular activity	Motivation – reflective	Prisoners currently tend to focus their physical activity on lifting weights rather than engaging in cardiovascular activity. Prisoners need to know the importance of cardiovascular activity to their health and change their physical activity routines accordingly	Education - Yes Persuasion - Yes Incentivisation - Yes but verbal praise only Coercion - Not practicable, no options to coerce in this context, also not acceptable	1.1 Goal-setting 1.4 Action planning 1.5 Review behaviour goal(s) 2.3 Self-monitoring of behaviour 3.1 Social support - unspecified 4.1 Instruction on how to perform a behaviour 5.1 Information about health consequences 9.1 Credible source 10.4 Social reward
Gymnasium perceived as only opportunity to do physical activity as opposed to other places in prison such as in cell or on the exercise yard	Motivation – reflective	Perception among prisoners that there is a lack of physical activity opportunities due to limited access to gymnasium. Physical exercise outside of the prison gymnasium (i.e. in-cell or on the yard) can be encouraged	Education - Yes Persuasion - Yes Incentivisation – Yes but verbal praise only Coercion - Not practicable, no options to coerce in this context, also not acceptable	5.1 Information about health consequences 1.2 Problem solving 1.4 Action planning 10.4 Social reward

Table 6-1 continued: Table documenting development of intervention through the BCW steps

Unhealthy lifestyles entrenched behaviours – part and parcel of prisoners lifestyles	Motivation – automatic	Suggestion among staff that unhealthy lifestyles, including smoking, poor diet and lack of physical activity, are part of prisoners lifestyles and have become habits. Prisoners need to change these behaviours and ensure that smoking cessation, a healthy exercise routine and healthier eating choices become part of their routines and become ingrained habits	Persuasion - Yes Incentivisation – Yes but verbal praise only Coercion – Not acceptable to prisoners Training - Yes Environmental restructuring - Not practicable, no options to influence prison environment to change to encourage change in prisoners habits Modelling – Yes Enablement - Yes	8.4 Habit reversal 8.2 Behaviour substitution 8.3 Habit formation 2.3 Self-monitoring of behaviour 9.1 Credible source 5.1 Information about health consequences 5.6 Information about emotional consequences 13.1 Identification of self as role-model 3.1 Social support (unspecified) 1.1 Goal-setting 1.4 Action planning 1.6 Discrepancy between current behaviour and goal 1.9 Commitment 9.2 Pros and cons 10.4 Social reward 2.2 Feedback on behaviour 2.6 Biofeedback 6.1 Demonstration of behaviour

Table 6-1 continued: Table documenting development of intervention through the BCW steps

Unawareness around healthy lifestyles	Capability – psychological	Suggestion among staff that prisoners are unaware of healthy lifestyles both in terms of how to lead them and the negative impact unhealthy behaviours have on their health. Prisoners need to be 1) made aware of what healthy lifestyles consist of in terms of not smoking, what foods to eat and what sorts of exercises to be undertaken and how often, 2) the negative impact that smoking, poor diet and lack of physical activity can have on their health and on others around them	Education - Yes Training - Yes Enablement - Yes	5.1 Information about health consequences 5.6 Information about emotional consequences 9.2 Pros and cons 2.3 Self-monitoring of behaviour 2.2 Feedback on behaviour 2.6 Biofeedback 4.2 Information about antecedents 4.1 Instruction on how to perform a behaviour 3.1 Social support (unspecified) 1.1 Goal setting 1.5 Review behaviour goals 1.6 Discrepancy between current behaviour and goal 1.2 Problem solving 1.4 Action planning 13.1 Identification of self as role model 1.9 Commitment

Table 6-1 continued: Table documenting development of intervention through the BCW steps

Seeing another prisoner change their own behaviour/having a role model displaying behaviours can help motivate	Opportunity – social	Seeing another prisoner change their behaviour or having a role model displaying prosocial behaviours may motivate as instils belief. Provide prisoners with direct examples of other prisoners who have managed to change their own smoking, diet and physical activity in prison	Modelling - Yes Enablement - Yes	6.1 Demonstration of behaviour 9.1 Credible source

Step seven of the BCW involved the advisory steering group mapping the chosen intervention functions to potentially relevant behavioural change techniques (BCTs) from the behavioural change taxonomy version 1 (Michie et al., 2013). Decisions regarding the BCTs to be included in the intervention were again based upon these techniques meeting the APEASE criteria previously discussed. The final column of Table 6-1 displays the 25 BCTs chosen by the advisory steering group to be included in the peer-led intervention to modify the NCD risk-behaviours of prisoners. The final step of the BCW (step 8) involved deciding upon the mode of delivery of the intervention, including who the intervention was going to be delivered by, the format of delivery, and over what time-frame.

6.2.2.1 Peer-delivery with the incorporation of staff

As identified in the phase one qualitative study, both prisoner and staff participants were very supportive of the idea to develop a peer-led intervention to modify the NCD risk-behaviours of prisoners, but also highlighted the need for staff involvement to ensure the focus and structure of the intervention, while also being available to support the peer-workers. Based upon this finding, the decision was taken for prisoner peer-workers to deliver the intervention, with the researcher present during delivery to ensure the necessary structure and support. More details pertaining to the selection of appropriate peer-workers is provided in section 6.3 later in this chapter.

6.2.2.2 Format of delivery

With regards to the mode of the delivery, both prisoner and staff participants stated a clear preference for the proposed peer-led intervention to comprise of weekly group sessions with the option for recipients to access one-to-one support from the peer-workers if they so wished. This suggestion was put forward as participants appeared to believe that group forms of support are particularly beneficial in prison environments, but that not all prisoners may necessarily be comfortable sharing their experiences in the presence of others. The insight gained from the qualitative study led to the incorporation of both types of support into the peer-led intervention. Specifically, it was decided that the main content of the peer-led intervention would be delivered in a group setting, with groups held on a weekly basis. In addition to these groups, the peer-workers would also

offer the option of one-to-one support, which could either take place after the weekly group sessions or on the recipient's prison wing at a later time.

6.2.2.3 Length of delivery

Qualitative data from prisoner and staff participants indicated that the peer-led intervention should be delivered over a set time-frame, with suggestions ranging from 6 to 12-weeks. When liaising with the activities department manager at the prison sites regarding the proposed length of the intervention, concerns were raised regarding organising the intervention over a time period exceeding six-weeks, primarily due to a concern that such would likely interfere with prisoner participants' attendance at work or education. This need to not interfere with prisoners work and/or education was not surprising, as this was an aspect highlighted by the staff participants during the phase one qualitative interviews. A cautionary note had also been provided by some of the participants during phase one that the longer the intervention was delivered over, the more likely problems would be encountered with regards to the loss of peer-deliverers owing to prison transfer or release from custody. Indeed, this was confirmed by the staff member responsible for organising prison transfers within the Offender Management Unit at Prison A, who stated that they would only be able to place a six-week hold on any prisoners subsequently recruited to work in the peer-role. With all of the above in mind, the decision was taken to schedule the peer-led intervention over a six-week period, with the group sessions scheduled to take place once per week over the six-weeks.

During the interviews and focus groups, staff and prisoner participants had suggested that support for recipients be ongoing upon completion of the scheduled group sessions, with participants often making reference to recipients being able to refer back to the group sessions, or being able to access individualised support from the peer-workers if they were struggling. Unfortunately, ongoing support from the groups or the peer-workers was unfeasible, as for the purposes of research and evaluation, the peer-intervention was being implemented for a set period of time only. However, to include the suggestions of participants from phase one, and to ensure that the intervention recipients were still able to access support post peer-led intervention delivery, the advisory steering group incorporated into the final weekly group session the

provision of details as to how recipients may access further support regarding their smoking, diet and physical activity upon completion of the intervention.

6.2.3 Developing an intervention manual

Following identification of appropriate BCTs to encourage modification of NCD risk-behaviours among prisoners through undertaking the systematic process of the BCW discussed above, along with making important decisions regarding the mode of delivery, the advisory steering group developed an intervention manual to be delivered to intervention recipients over the course of the intervention that incorporated all 25 of the BCTs displayed in Table 6-1 (see Supplementary Material for intervention manual). Given that the intention was for the intervention to be delivered to intervention recipients by the prisoner peer-workers in a systematic fashion, the intervention manual was written specifically for the prisoner peer-workers, providing them with detailed instructions on how to deliver each of the intervention sessions. Following development of the intervention manual by the advisory steering group, the researcher met with a prisoner patient group in each of the prisons to check for its appropriateness. During these discussions, slight alterations to the wording of the manual were suggested, however, no suggestions regarding the removal of the BCTs incorporated were raised by the groups, nor were there any suggested additions. The suggested alterations to the wording of the intervention manual were made by the researcher.

6.3 Recruitment and selection of peer-workers

A key theme prominent in both the literature review and the thematic analysis of the phase one qualitative data was the importance placed upon the selection of suitable prisoners with positive qualities and attributes to fulfil the role of health peer-workers. This was suggested to be key to the successful implementation and credibility of peer-led health schemes in prisons. Such desirable qualities identified from the literature review, and from phase one, included the peer-workers being good role models, being approachable and friendly, possessing good communication skills, being trust-worthy and wanting to help others rather than undertaking the role for self-centred reasons. In light of these important

findings, for phase two of the study, the researcher aimed to recruit peer-workers possessing such positive qualities to deliver the peer-led health intervention. In order to do this, the researcher adopted a widely used method of recruiting peer-workers in prisons, and a method that was consistently proposed by both prisoners and staff during phase one; that being to invite applications for the role and then interview potential candidates to determine their suitability for the peer-role.

An appropriate job description reflecting the key suggested qualities and attributes discussed in the literature review and from the phase one qualitative study was devised by the researcher (see Appendix 11), along with posters advertising the role (see Appendix 12). The posters advertising the role were displayed in different areas throughout each of the two prisons to maximise visibility and reach, as the researcher intended on recruiting at least one peer-worker per prison wing, to ensure peer-workers were available on all prison wings to provide one-to-one support. Areas where these posters were displayed included on the prison wings, in the healthcare department, in the prisoner workshops and in the prison gymnasium. The poster instructed those prisoners interested in working in the peer role to complete a request form to speak with the researcher further, and submit these to the prisoner information desk on their respective wing. The prisoner information desk workers then sent each of the requests to the healthcare department, addressing them to the researcher.

The researcher then met with each of the prisoners who had expressed an interest in working in the peer-role. During this meeting, the researcher verbally went through the information contained in the peer-worker participant information sheet (see Appendix 13), to ensure that the potential peer-workers had a full understanding of what participating in this research project and working in the peer-role would involve. Specifically, the researcher highlighted that they would be required to complete an application form (see Appendix 14) and, if approved by security, would be invited to attend an informal interview to determine whether or not they would be suitable to work in the peer-role. It was also made clear that the role was temporary, lasting approximately two-months; one-week of training followed by six-weeks of intervention delivery to their prisoner peers. For those prisoners that wanted to progress with their peer-worker application, the

researcher asked these prisoners to sign an informed consent form (see Appendix 15), which was also signed by the researcher. Following provision of consent, the researcher provided these prisoners with the peer-worker application form to complete in their own time. The peer-worker job application form instructed the potential peer-workers to submit their completed application form to the prisoner information desk on their respective wing, and the prisoner information desk workers forwarded these on to the researcher.

To check the suitability of each prisoner applicant for the role, each of the application forms were passed first to a senior prison officer working on the wing on which the prisoner resided, and then on to the security department. The senior prison officer was required to add a comment to the application form on the suitability of the prisoner for the role, through reflecting upon the prisoner's behaviour both on the wing and throughout the wider prison. This process was undertaken to determine the applicant's engagement with positive or negative behaviours during their most current stay in custody. Most participants during the phase one study identified negative behaviours as an important criterion to preclude prisoners from working in a peer-role. Following completion by the prison officer, the application form was forwarded to the security department who were asked to indicate whether or not the prisoner would be approved to work in a peer-role in the prison environment, and if not, reasons for non-approval.

Following full completion of the application form by the prisoner applicant, a relevant prison officer and the security department, each application was reviewed by the researcher and the external advisor to ascertain potential suitability for the role. Those prisoner applicants with significant negative behaviour reports from their prison wing officer, and those not approved by security, were automatically excluded from proceeding to the next stage of the application process, which involved an informal interview with the researcher to further ascertain suitability. Of those applications that were deemed potentially suitable, the researcher met with those applicants in person to ensure they wanted to progress their application, and if so, invited them to the informal interview with the researcher.

Informal interviews took place with the potential peer-workers over a two-week period in December 2016. The questions asked during the interview were

designed to elicit responses that would determine whether or not the prisoners possessed the positive qualities and attributes often sought in prisoner peer-workers (see Appendix 16 for peer-worker interview questions). Questions regarding the potential peer-workers' sentence status were also asked as certain recruitment criteria had been introduced to combat the potential for peer-worker attrition. Specifically, it was decided that consideration for the role would only be given to those whose stay at the prison (or expected stay) extended beyond the expected intervention completion date. Both the researcher and the healthcare member of staff conducting the interviews made notes of the responses of the prisoners to the questions asked. Following all of the peer-worker interviews, the notes taken by the researcher and member of staff were reviewed, and were used to inform the decision to offer or not the peer-worker opportunity. All applicants interviewed were informed by the researcher in person of the outcome of their interview, with successful interviewees invited to work in the peer-worker role. Figure 6-3 and Figure 6-4 summarise the above procedure at each of the two prisons, highlighting the number of potential peer-workers involved at each stage.

As can be seen from Figure 6-3 and Figure 6-4, 35 prisoners in total applied to work in the peer-role, with 11 applications from Prison A, and 24 applications from Prison B. Four peer-workers at Prison A and nine peer-workers at Prison B were successful and offered the peer-worker role. However, two of the successful applicants at Prison B declined the job offer, meaning that the final number of peer-workers recruited and invited to undertake the peer-worker training at Prison A and Prison B were four and seven respectively. With their agreement, and at the agreement of the prison, the four peer-workers at Prison A were put on hold to prevent them from being transferred to another prison establishment.

Unfortunately, the small number of peer-workers at each of the sites inevitably meant that the researcher was unable to fulfil the aim of having one peer-worker per wing at each of the prisons as mentioned earlier in the chapter. At Prison A, the four workers covered four of the six prison wings, and at Prison B, five of the ten prison wings were represented by the seven peer-workers. However, at each of the two prisons, at least one of the peer-workers had a form of enhanced status which enabled them greater movement around the prisons, meaning they were able to access other wings to provide support to other prisoners if required.

Before commencing formally in their role, the peer-workers at both sites undertook five-days-worth of training to prepare them for the role; the following section describes in detail how the peer-workers were trained.

6.4 Training of peer-workers

It was identified from the literature review and the phase one qualitative study that appropriate training of peer-workers is critical to enable peer-workers to fulfil their role in prison environments, and thus careful attention was paid to how the peers in this study would be trained. Moreover, the existing literature also suggests that peer-worker training in prisons should adopt multi-sensory learning that does not rely solely on materials in the written format, but instead uses learning modalities such as drawings, videos and participatory role-play activities, with such a suggestion to mitigate against the many literacy difficulties prisoners face (Dubik-Unruh, 1999). In order to ensure consistent training was provided to the peer-workers over the two sites, a standardised training manual was developed by the researcher and the external advisor (see Supplementary Material for training manual).

The training with peer-workers at each of the two prison sites was conducted over five days at the end of December 2016. The training to the peers was delivered by the external advisor (referred to in the manual as trainer), with support from the researcher (referred to in the manual as facilitator). The external advisor was deemed suitable to deliver the training on the basis of extensive experience in supporting behaviour change in the prison environment, and in the areas of healthy lifestyle. Moreover, they are also experienced in delivering ‘Train the Trainer’ training days.

The training comprised of three components; an introduction, the main body focussing on modifying NCD risk-behaviours among prisoners, and pertinent issues relating to implementation. The first part of the training, which was delivered to the peer-workers on the first day of training, was designed to be an introduction to the peer-workers, whereby they were introduced to some of the research team members involved in the study (the researcher and the external advisor), introduced to each other, and made aware of the background underpinning the research project.

The remaining three days of training focussed on preparing the peer-workers to help modify other prisoners smoking, diet and physical activity behaviour. These three training days essentially consisted of guiding the peer-workers through the six-week intervention manual they would be delivering to their prisoner peers in the group sessions, with the different BCTs behind the components in the intervention manual explained to the peer-workers. These sessions were highly interactive and multi-sensory, involving the peer-workers role-playing some of the exercises contained in the intervention manual that they would be delivering to their prisoner peers, with some peer-workers playing the role of peer-workers and the others the role of intervention recipients. The intention of such interactivity was to better engage the peer-workers and also give them a greater understanding of the intervention components they would be working through in the group sessions.

The final day of training related to training the peer-workers in the areas of confidentiality, dealing with difficult situations and dealing with scenarios in which prison security rules and regulations had been breached. Again, these sessions were very interactive, involving the presentation of vignettes to peer-workers to explore what they would do in certain situations, and the undertaking of role-play tasks to cement the learning presented.

During this final day of training, peer-workers were given the opportunity to ask the researcher and external advisor any questions they had about the topics covered, and the upcoming intervention they would be delivering to their prisoner peers. They were also advised that additional training could be organised should it be felt that such was needed. Peer-workers were informed that the researcher would be present at all of the intervention group sessions and would be available should the peer-workers encounter any problems in the delivery of the group sessions. The peer-workers were given details as to how to contact the researcher should they have had any questions in the delivery of the intervention over the course of the research project. Details of a ‘back-up’ member of healthcare staff were also provided if an immediate response was needed in the absence of the researcher.

Figure 6-3: Peer-worker recruitment and selection at Prison A

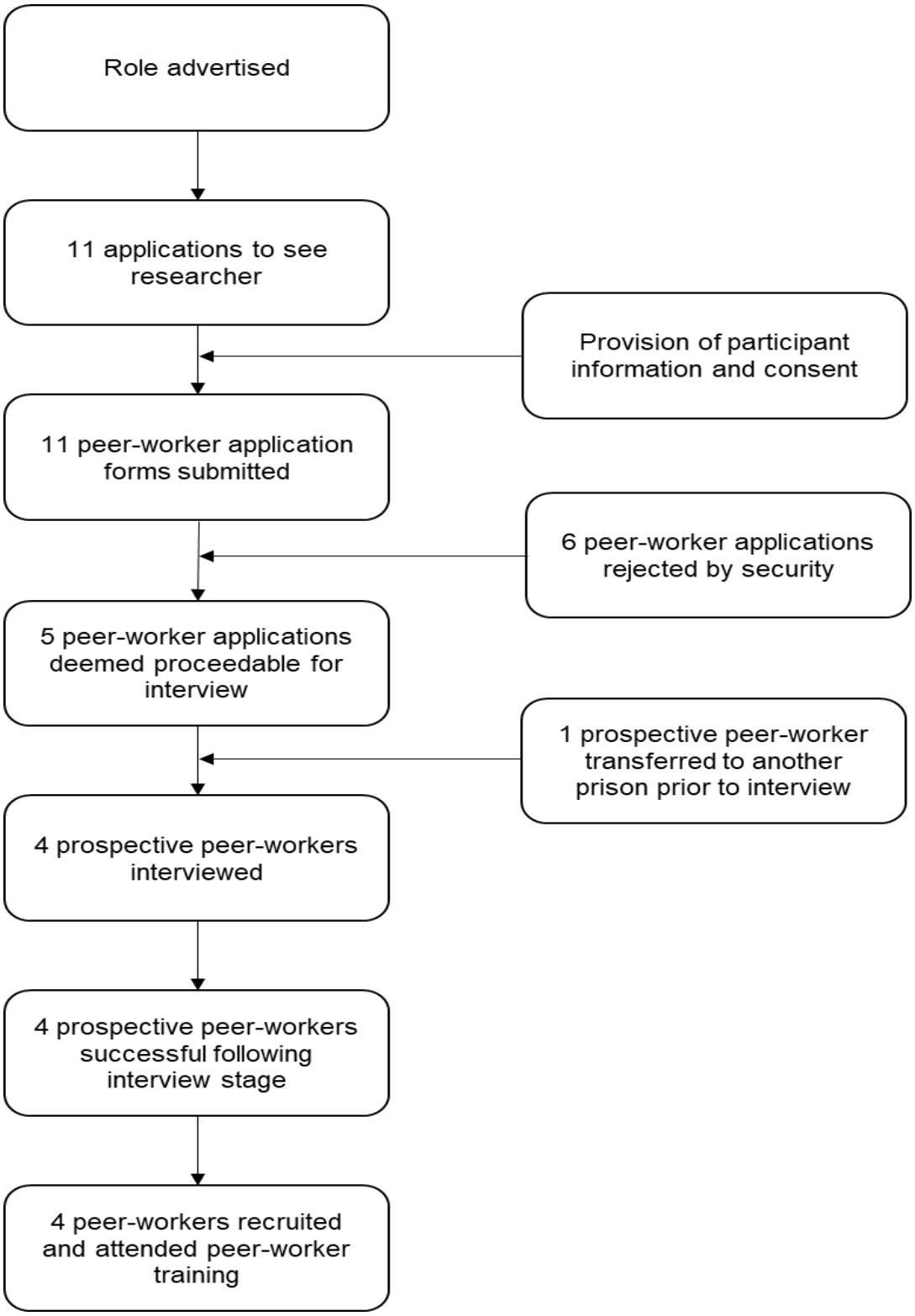
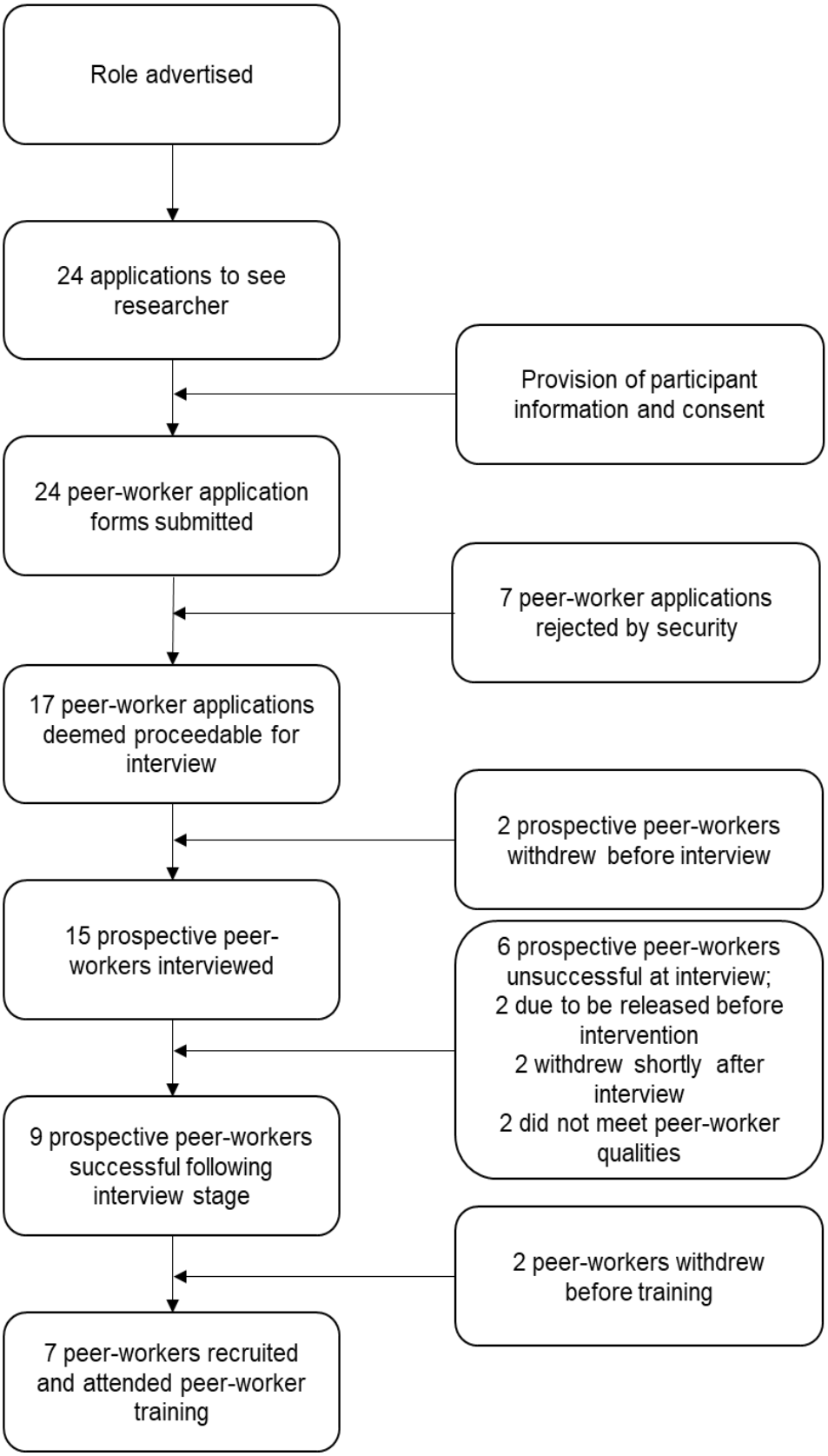


Figure 6-4: Peer-worker recruitment and selection at Prison B



Unfortunately, after undertaking the peer-worker training, and before commencement of phase two of the research, a number of peer-workers withdrew from the role; two from Prison A and four from Prison B. Of the two at Prison A, one was forcibly withdrawn due to prison transfer, whereas the second withdrew due to experiencing stressful personal circumstances which made them feel no longer able to fulfil the role. Of the four peer-workers from Prison B, three withdrew as they felt unable to fulfil the role alongside their other work and prison courses, while the other peer-worker was transferred just one week after completing the peer-worker training described above. This meant that when commencing phase two, two trained peer-workers were in post at Prison A and three were in post at Prison B. However, at both sites, one of the peer-workers held a form of enhanced status enabling them greater movement around the prisons, meaning that they could visit other wings to provide one-to-one support outside of the group sessions.

6.5 Chapter summary

This chapter has provided a detailed discussion of how the peer-led intervention was developed incorporating key findings from the phase one qualitative work. Specifically, the chapter detailed how the qualitative work, along with appropriate theory, informed the content of the intervention, its format of delivery and the length of time over which it would be delivered. An explicit overview of how the peer-workers were recruited, selected and trained to deliver the peer-led intervention to recipients for phase two of the study was also provided. The following chapter presents the methods that were utilised during the phase two study, which involved implementation of the peer-led intervention developed to explore whether or not a full-scale definitive trial assessing the effectiveness of a peer-led intervention in modifying prisoners NCD risk-behaviours would be feasible.

Chapter 7 Phase Two Methods

7.1 Introduction

This chapter presents the methods that were used in phase two of this PhD project. It begins with a description of the study setting and of the ethical considerations pertinent to this stage of the research. The remaining sections describe the data collection and analytical methods used throughout the second phase of the research, with justifications for the methods chosen provided. Specifically, there is a critical discussion of the research design, recruitment strategy, sample size, data collection tools used and the data management strategy. The chapter concludes with a description of the data analysis methods employed.

7.2 Study setting

The second phase of the research also took place in Prison A and Prison B. Chapter Four provided a detailed description of each of these prison establishments, with such descriptions still applicable for this second phase. However, it must be noted that between completion of phase one and the commencement of phase two, there was one major change that took place in the prisons. The healthcare provider responsible for the provision of healthcare at each of the two prison sites changed, and this did have implications for the researcher. Due to the change in provider, the researcher was required to renegotiate with the new healthcare provider access to the prisons to ensure continuity of the research project. Furthermore, as the second phase was now taking place at non-NHS sites, a slightly different approach to obtaining NHS REC approval was required, more details of which are described below in the following section pertaining to ethics.

7.3 Ethics

7.3.1 The approvals process

To obtain the necessary approvals for phase two of the research, the NHS REC and NOMS forms within the Integrated Research Application System (IRAS) were completed and submitted to the NHS REC and NOMS NRC respectively. Amendments to the participant information sheet and development of peer-worker information sheets and consent forms requested by the reviewing NHS REC were made, and a favourable opinion was granted (see Appendix 17). NOMS NRC approval was received subject to slight amendments to the participant information sheet and consent form (see Appendix 18). Following these approvals, permissions from the governing Governor at Prison A and Prison B were obtained. The researcher also obtained approval from the private organisation responsible for healthcare provision in the prisons. As the healthcare provider at the prison sites was a private organisation, and thus the research was taking place at non-NHS sites, the researcher was required to complete a site-specific information form for both Prison A and Prison B. These were submitted to the NHS REC and granted favourable opinion (see Appendix 19-20).

7.3.2 Ethical considerations

The ethical concerns relating to this second phase of the research and that were considered in the design of the study were similar to the ethical considerations applicable to phase one of the research previously discussed in Chapter Four. The principle of voluntariness and ensuring participants were explicitly aware of it being their choice whether or not to participate in the research was a serious ethical consideration, particularly given the limitations to prisoners liberty and autonomy by the very nature of them being imprisoned (Lerner, 2007; Charles et al., 2014). The same safeguards put in place during phase one of the research to ensure voluntary participation and lack of coercion were also implemented during the second phase of the research. Specifically, the voluntary nature of participation and the right to withdraw were highlighted in the participant information sheet that was distributed to potential participants. This information sheet also made it clear to the potential participants that non-participation would not affect their legal status or the services they received from the healthcare

department in any way. The decision was also taken to ensure the researcher was not the first person that made contact with potential participants concerning the research project, as such could have been perceived to be potentially coercive. Details regarding how participants were first approached and recruited is discussed later on in this chapter in the recruitment section.

The provision of study information materials that were easily understandable was a further ethical consideration deemed to be pivotal to ensuring that the potential participants understood why the study was being conducted and what it would require of them if they decided to take part. Given the literacy difficulties faced by many prisoners in the UK (Prisoners Education Trust, 2015), the researcher constructed the participant information sheet and research advertisement posters using easy to read language and short and simple sentences. These materials were reviewed by a prisoner patient information group at each of the two prison sites. These groups helped identify areas in the information sheet and posters that required further simplification The information sheets and posters were amended in light of the feedback from the groups. The clarity of the participant information sheet was then checked again by a small group of prisoners when undertaking the piloting of the phase two questionnaire, which is discussed later in this chapter in the data collection section. The decision was also taken for the researcher to present verbally the information contained in the participant information sheets, to mitigate against circumstances where participants may have lacked the necessary literacy skills to read and understand this written information.

A further ethical consideration unique to this second phase of the research was ensuring the safety of the researcher and the intervention arm participants throughout the peer-led group delivery, and a number of safeguards were put in place to ensure this. Firstly, prisoners deemed high-risk on their prisoner record were excluded from participating in the second phase of the research. This was done both to ensure safety of the researcher and other participants, and due to the fact that such high-risk prisoners would not normally be approved by the prison to partake in any form of group activity in light of their risk status.

Prior to the peer-groups taking place, the researcher also underwent the radio training in each of the prisons to enable the researcher to carry a prison radio.

The rationale for carrying a prison radio was to alert the prison if any security matters occurred during the delivery of the peer-led group session, or if the researcher required assistance from a prison officer for whatever reason. The researcher was fully trained on how to use the radio and the codes to give out should certain incidents have occurred. The carrying of a prison radio was agreed by the researcher and senior management of the prisons, as a healthcare member of staff was not always available to sit in with the researcher on the peer-led group sessions, and prison staff were unable to due to confidentiality reasons. The final safety precaution implemented was the use of a buddy system, whereby the researcher notified a member of the research team just prior to and following a peer-led group. The nominated buddy was aware of the procedure to follow should the researcher have not contacted them within two hours of the expected group finish time.

7.4 Randomised controlled design

The primary aim of this overall PhD study was to explore the feasibility of conducting a definitive randomised controlled trial exploring the potential of a peer-led intervention to modify smoking, diet and physical activity amongst prisoners. The second phase of the research was specifically concerned with exploring the following feasibility objectives;

- To establish levels of recruitment and retention
- To establish whether or not the process of randomisation is acceptable to participants
- Will participants randomised to the intervention arm attend the intervention sessions as intended
- Will the peer-workers deliver the intervention as intended
- Will participants find the peer-led intervention acceptable
- To establish levels of contamination to the control group
- To establish completion rate of selected data collection measures

Through exploring these feasibility objectives, the researcher would be able to determine whether or not it is appropriate to proceed to a full-scale definitive trial,

and if so, whether any refinements would be required to the intervention and/or the study procedures to make them more acceptable to the study participants of the future trial (O'Cathain et al., 2015). Moreover, figures pertaining to recruitment and attrition from the feasibility study would be able to be used to inform the definitive trial, in terms of ensuring it is sufficiently powered to explore differences in the outcome measures between the study arms (Craig et al., 2008). In addition to the aforementioned feasibility objectives, a secondary objective of this phase was to explore the potential efficacy of the intervention with regards to changing the behaviour, knowledge and attitudes of participants in the areas of smoking, diet and physical activity.

As mentioned in the earlier Methodology Chapter, a randomised controlled experimental design was utilised to explore the above aims and objectives of the phase two feasibility study. Specifically, a two-arm, parallel randomised controlled design was utilised. The remainder of this section details how participants were randomised and informed of their randomisation allocation, along with a brief description of the two study arms.

7.4.1 Randomisation

Following the provision of informed consent and the completion of baseline measures, participants were randomised on a 1:1 basis to one of the two study arms using a blocked randomisation technique. The blocked randomisation technique was chosen, as this would be the technique employed in a future definitive trial designed to randomise at the individual level, with feasibility studies recommended to mirror the main design features of a definitive trial as much as possible (Thabane et al., 2010). The rationale for why blocked randomisation would be used in a future definitive trial, over simple randomisation, is because this method of randomisation overcomes the limitations of simple randomisation whereby there may be an unequal balance in the allocation of participants to the arms of the study (Schulz and Grimes, 2002; Efird, 2011). Unequal group sizes are undesirable due to their potential to reduce the statistical power to detect significant differences between study groups (Efird, 2011).

At each of the two prison establishments, participants were randomised in four blocks of ten using the computer webpage Randomisation.com

(Randomisation.com, 2007). The randomisation allocation was carried out for the two prisons separately to ensure that there were equal numbers of intervention and control participants at each of the two prison sites. At each prison, 20 participants were randomly allocated to the intervention arm and 20 participants were randomly allocated to the control arm. Thus, overall, 80 participants were recruited and randomised; 40 participants were allocated to the intervention arm and 40 were allocated to the control arm. All of the participants were informed of their random allocation by the researcher in person.

7.4.2 Intervention arm

Participants randomly allocated to the intervention arm were offered the peer-led intervention. This consisted of attending one supportive group session per week, which was led by specially trained prisoner peer-workers. The peer-led groups ran over a six-week period and each group session lasted approximately one hour and a half to two hours. At each of the two prisons, the group sessions were held in a group meeting room away from the prison wings. At Prison A, the venue was a classroom based near the chapel, and at Prison B, the venue was a group room located in the healthcare department. Intervention arm participants at Prison A were escorted to the group room from their respective prison wings by a prison officer, while intervention participants at Prison B made their own way to the group room on line-route. The researcher sat in on each of the group sessions at the two sites. Prison staff were not in attendance for confidentiality reasons, however, a prison officer was always nearby in case an incident occurred.

At the weekly group sessions, the specially trained peer-workers led the peer-group discussions following a step-by-step intervention manual developed by the research team (see Supplementary Material). The intervention manual was sectioned into weeks and explained to the peer-workers the intervention components to be covered at each of the weekly sessions. Helpful text-boxes were provided in the manual to help the peer-workers if they were struggling with a particular section of the intervention manual. A detailed description of the development of the intervention manual was provided in Chapter Six. If intervention arm participants missed any of the group sessions due to unforeseen circumstances (i.e. family visits, attendance at court and clashing appointments), the peer-workers were encouraged to see the participants prior to the following

group session to cover what was missed. In addition to the peer-led group sessions, intervention arm participants were able to access one-to-one support from the peer workers outside of the group sessions if they so wished.

7.4.3 Control arm

Participants randomly allocated to the control arm were able to access the usual care provided in the prison to address their smoking, diet and physical activity if they so wished. The usual care provided to prisoners in each of the two prisons for smoking cessation consists of one-to-one support provided by a specially trained member of healthcare staff. Prisoners enrolled on to the usual care smoking cessation course must meet with the healthcare member of staff on a weekly basis. During these meetings, the member of staff discusses with the prisoner how they have got on over the previous week, and the prisoner is expected to have their CO levels measured, via a CO monitor, to verify whether or not the prisoner has been smoking. During this meeting, the prisoner is also provided with any smoking cessation medications that have been prescribed to them in order to aid their stop smoking attempt. Unlike with smoking cessation, during the period of the research, there were no specific usual care interventions that prisoners could access to address their physical activity levels and diet. However, it was made aware to the researcher during the first phase of the research that prisoners within the prison could seek help from members of the healthcare long term conditions team, and the prison gymnasium staff, if they required support and guidance with regards to their levels of physical activity and diet.

7.5 Recruitment

As mentioned in the above sections, an equal number of participants from Prison A and Prison B were recruited, and the recruitment method consisted of the following. Posters advertising the research were developed by the researcher (see Appendix 21) and displayed throughout each of the prisons to maximise visibility and reach. Areas where these posters were displayed included on the prison wings, in the healthcare department, in the prisoner workshops and at prisoner information desks. The posters advised potential participants who were

interested in participating that further information about the research could be obtained from the prisoner information desk workers on their wing. Prior to advertisement of the research in this way, the researcher met with the prisoner information desk workers at each of the two prisons and informed them about the research and what it would involve for participants who wanted to take part. The prisoner information desk workers were also provided with copies of the participant information sheet (see Appendix 22) to disseminate to potential participants expressing an interest in participating.

The information sheet instructed those prisoners who were interested in participating in the research to submit an application form to meet with the researcher; the potential participants that had expressed an interest in participating were then seen by the researcher. During this meeting, the researcher verbally discussed the information contained in the participant information sheet, to ensure that potential participants had a full understanding of the research and what it would involve if they were to take part. Potential participants were given at least 24 hours to reflect upon the participant information before deciding whether or not they wished to take part in the study. After reflecting upon the participant information and making the decision to participate, participants were asked to meet with the researcher again to obtain informed consent and check for eligibility.

During the informed consent process, the researcher read each of the statements contained within the consent form (see Appendix 23) and advised participants to place their initials next to each of the statements if they agreed with them. Participants were then asked to sign and date the consent form which was also signed by the researcher. A copy of the signed consent form was given to the participants for their records. After obtaining informed consent, the researcher checked each participant's prisoner record to ensure that they met the eligibility criteria. The full list of inclusion and exclusion criteria was as follows.

7.5.1 Inclusion criteria

Participants were eligible to be recruited into the trial if they met the following criteria;

- 21 years or older. This is because those under the age of 21 are classified as young offenders and are usually held in young offender institutions. Only in exceptional circumstances are young offenders held in establishments classified for adult prisoners
- Possesses the mental capacity necessary to provide full informed consent
- Expected to be in prison for the full duration of the intervention delivery

7.5.2 Exclusion criteria

Participants were deemed ineligible to participate in the trial if they met the following criteria;

- Under the age of 21 for reasons discussed above
- Lacks the mental capacity to provide full informed consent
- Those who will not be or are not expected to be in prison for the full duration of the intervention delivery
- Those deemed a high-security risk as indicated on their prisoner record
- Those unable to understand and/or speak English
- Those with a severe life threatening physical illness that would preclude them taking part in physical activity (i.e. bed bound due to terminal illness)

7.6 Sample size

Setting an appropriate sample size for any study is important to be able to answer the research aims and objectives, however, there is a lack of published guidance pertaining to appropriate sample sizes required for feasibility studies (Billingham et al., 2013). Although there is no specific guidance regarding sample sizes for feasibility studies, it has been acknowledged that such studies do not require formal power calculations to determine sample size (Arain et al., 2010). This is because rather than looking for clinically significant differences between the study

arms, which requires the study to be appropriately powered, the emphasis of feasibility studies is instead focussed on answering the feasibility objectives to inform a definitive trial, with such information primarily descriptive in nature (i.e. recruitment rate, randomisation acceptability, retention). This is acknowledged by the National Institute for Health Research (NIHR) in their published guidance on conducting pilot and feasibility studies, where it is stated that “the usual sort of power calculation is not normally undertaken. Instead the sample size should be adequate to estimate the critical parameters (e.g. recruitment rate) to the necessary degree of precision” (NIHR, 2016, p.2). A recent audit of feasibility studies in medicine and health found that on average feasibility studies contain 36 participants per study arm (Billingham et al., 2013). With all of the above in mind, a sample size of 80 participants, with 40 participants per study arm, was deemed to be appropriate to estimate the parameters for a definitive trial.

7.7 Data collection

A number of different data collection methods were employed to collect the necessary data to meet the objectives of the second phase of the research. This section presents the data collection methods utilised to meet each of the objectives.

7.7.1 Screening and recruitment

The rate of recruitment was measured by keeping a screening log (Appendix 24). The screening log detailed the numbers of those potential participants that were screened, the number of those that took the decision not to take part in the research, the number of those excluded due to not meeting the eligibility criteria and the number of participants who went on to participate in the trial. The screening log detailed reasons for ineligibility and, where possible, the reasons given by potential participants for taking the decision not to participate in the research. Potential participants that made the decision not to participate were invited to provide a reason but were reassured that they did not have to provide their reasoning if they did not want to, and thus a reason was not always provided.

7.7.2 Randomisation acceptability

Randomisation acceptability was captured through the following three ways. Firstly, where potential participants screened made the decision not to participate, citing the reason for such as being due to the randomisation procedure, a record was made in the screening log to reflect this. Secondly, in cases where enrolled participants that consented and were randomised expressed disappointment at their randomisation allocation to either the intervention or control arm, a note was made in the recruitment and follow-up spreadsheet to indicate that they had expressed disappointment at their allocation (see Appendix 25 for recruitment and follow-up spreadsheet). The final point at which randomisation acceptability was captured was at each of the follow-up periods; immediately post-intervention, one-month post intervention and three-months post-intervention. Where participants were successfully contacted at these follow-up points but refused to carry on participating in the study, and mentioned that such was due to their discontent at their randomisation allocation, this was coded in the recruitment and follow-up spreadsheet. It was also planned to do a statistical analysis test to explore whether or not there was a significant difference between the successful follow-up of intervention versus control participants at each of the follow-up time points. If the analyses revealed that there was a significant difference between the intervention and control participants with regards to attrition at each of the follow-up time points, it could be inferred that randomisation was not deemed acceptable by the participants (Bryant et al., 2011). Details regarding the conduct of this analysis are presented later in this chapter.

7.7.3 Intervention attendance

Intervention attendance by the participants randomised to receive the six-week peer-led intervention was recorded through a register of attendance. This register of attendance for each of the sessions was completed by the researcher, with reasons for non-attendance recorded in instances where reasons had been provided (i.e. absent due to a Court appearance). If a reason for absence was not provided, the researcher made every effort to meet with the participant after the session to check their desire to continue with participation.

7.7.4 Intervention fidelity

Even though intervention fidelity is an important concept in behavioural change research, there is a lack of published guidance available to researchers to guide them on how to monitor and evaluate fidelity (Gitlin and Parisi, 2016). For instance, in the MRC guidelines for intervention development and evaluation, published by Craig et al. (2008), although fidelity and its importance is discussed, the guidelines offer no suggestions as to how fidelity may be measured. Nonetheless, some authors in the behaviour change field have suggested that fidelity can be measured through quantitative observation of intervention sessions, whereby the important components to be covered during an intervention session are quantitatively recorded as either being delivered as intended or not delivered (Bellg et al., 2004; Linnan and Steckler, 2002). To establish the potential to use quantitative checklists as a measure of fidelity, the researcher reviewed all articles published in the journal *Pilot and Feasibility Studies* for the years 2015 and early 2016, to explore how other studies had previously measured, or had proposed to measure, intervention fidelity. This step was taken as the leading guidance on the design and evaluation of interventions developed by the MRC heavily advocates pilot and feasibility studies to evaluate intervention fidelity (Craig et al., 2008), and thus it was expected that a large proportion of studies published in the journal would discuss fidelity and how it was measured. Leading studies and fidelity discussion papers from the reference lists of papers reviewed in the journal were also reviewed. Of the studies and protocols reviewed where fidelity was measured, or proposed to be measured, the majority of researchers did so through the use of observation of intervention sessions. Such observations involved a member of the research team, or an independent assessor, observing the session, either live or post-hoc via a video recording, coding on a pre-developed checklist unique to the study whether or not the intervention components included on the checklist were delivered as planned during the intervention session.

Based upon this review, the decision was made to measure intervention fidelity through the use of quantitative observation, whereby a checklist was used to determine whether or not the key components of the intervention were delivered as intended. Given that the researcher was required to sit-in on each of the group

sessions due to security regulations, the researcher was able to observe and measure fidelity at every one of the peer-group sessions at both prison sites. A checklist was developed by the researcher for each of the six group sessions. Each of the checklists covered the components contained in the intervention manual that the peer-workers were instructed to work through each week (see Appendix 26 for example of one of these checklists). Each of the components on the checklists were recorded by the researcher as either not delivered, delivered in full or delivered partially. To ensure reliability of the coding, an independent member of the healthcare team observed four of the peer-group sessions, two at each of the prison sites, and coded the components on the checklist independently to the researcher. The coding of the researcher and the second coder from the healthcare team were checked for coder reliability; more details regarding this are discussed later on in this chapter in the section regarding methods of data analysis.

In addition to the quantitative observations, the researcher also took field-notes of each of the group sessions. These field-notes covered aspects such as the morale of the group, the responsiveness of the participants to the components covered, any concerns raised by participants and any barriers to intervention delivery. This decision to take field-notes was made as it was felt that some of these aspects, particularly around barriers and concerns raised by participants, could not adequately be captured quantitatively through a checklist as they could not always be pre-anticipated to occur by the researcher. Through taking field-notes, the researcher was able to capture these aspects of fidelity that could not be quantified and thus adequately explored by a checklist.

7.7.5 Intervention acceptability

The primary methods utilised by health intervention evaluation studies to explore acceptability include examination of participant retention rates, the use of self-reported intervention acceptability questionnaires, and the undertaking of qualitative interviews or focus groups with service users post-intervention (Sidani and Braden, 2011; Richards and Hallberg, 2015). Each of these data collection methods was considered when deciding upon an appropriate method to measure intervention acceptability for this phase two feasibility study. The former suggestion to measure acceptability through examining retention rates was

discounted at an early stage, as factors other than acceptability may play a role in retention. For example, Sidani and Braden (2011) highlight that retention may be influenced by feelings of obligation to the researcher, the desire to contribute towards developing knowledge and a desire to receive compensation of some sort. As such, it is inappropriate to infer intervention acceptability from a high retention rate.

The combination of a quantitative self-report questionnaire and qualitative interviews with participants were initially considered as appropriate methods to measure participant views on the acceptability of the peer-led intervention, with such a combination of methods to measure participants' experiences with an intervention advocated (Moore et al., 2015). However, after further consideration, the decision was made to not proceed with interviews, and use only a quantitative self-report questionnaire with the inclusion of open text responses to facilitate the capturing of more qualitative data pertaining to acceptability. The main rationale behind this decision was due to the perceived time burden that the inclusion of qualitative interviews would have placed on participants. The intervention arm participants would have already attended a six-week peer-led intervention and were being followed up via the main survey on three separate occasions for three-months post-intervention. It was felt that asking them to further take part in an in-depth qualitative interview in addition to this would have been far too demanding on their time, much more so than a short questionnaire with the inclusion of open text-response questions to capture more in-depth data on intervention acceptability.

A further reason for the decision to use only a self-report questionnaire, as opposed to a combination of the questionnaire and a qualitative interview, was that it was anticipated that by the end of the intervention, there may have been a number of intervention arm participants that were no longer resident in either of the study prisons due to transfer to another prison or release into the community. In such cases where participants were no longer in the study prison, it was felt that it would have been logistically difficult to conduct a qualitative interview. In contrast, the undertaking of a short questionnaire that could be easily administered over the telephone in cases of prison release, or by a member of healthcare staff in cases of transfer, was deemed to be more logistically viable

and further contributed towards the decision to employ a self-report questionnaire only, rather than a combination of questionnaires and qualitative interviews.

The acceptability questionnaire used to measure the intervention arm participants' views on the acceptability of the peer-led intervention was developed by the researcher (see Appendix 27). The questions devised were based upon those used in previous studies of intervention acceptability in other health areas (Larsen et al., 1979; Cavanagh et al., 2009; Gage et al., 2014). The survey consisted of ten questions. The questions covered aspects such as how helpful participants had found the intervention, how successful participants found the intervention to be with regards to modifying their smoking, diet and physical activity, the aspects of the intervention that were the most and least successful, what could be done to improve the intervention, and whether or not participants would recommend the intervention or like it repeated with them at some point in the future. The questions varied in their structure. For some questions, participants were presented with statements and were asked to respond to these on a Likert scale. For these questions where participants responded to statements on a Likert scale, a free text box was presented at the end of each question to enable participants to elaborate on the reasoning behind choosing the option that they did. Other questions, such as those pertaining to the most/least successful aspects of the intervention, and any suggested improvements, were open ended with participants able to write as little or as much as they wished in response to the question. Only the intervention arm participants that had received the peer-led intervention were asked to complete the intervention acceptability questionnaire, and they were only asked to complete the questionnaire on one occasion. Control participants, and the small number of intervention participants that did not attend any of the peer-led group sessions, were not asked to complete the intervention acceptability questionnaire.

7.7.6 Contamination to the control group

Contamination has previously been explored to good effect in past research studies through the questioning of intervention and control groups to decipher if any information or intervention materials were shared by intervention arm participants with members of the control group (Howe et al., 2007; Lang et al., 2009; Doyle and Hickey, 2013). Some studies have also gone a step further and

questioned the control group about whether or not they have heard of specific terms or phrases that they could have only heard from either being told by an intervention participant or attending the intervention themselves (Doyle and Hickey, 2013).

The above approach involving questioning intervention and control participants to explore levels of contamination was adopted. A short questionnaire was developed by the researcher for each of the study arms (see Appendix 28 and 29) to establish whether or not contamination had occurred. The contamination questionnaire for control participants consisted of four questions, while the one for intervention arm participants consisted of three questions. The researcher verbally asked intervention and control arm participants each of the questions within the relevant contamination questionnaire and noted down their responses. The responses were intended to be answered on a yes or no basis, but also provided room to elaborate on the responses provided by participants. For example, if an intervention arm participant reported sharing information outside of the group sessions, and specified whom they had shared this information with (i.e. their cellmate or another prisoner in their workshop), then this information was noted down also. The contamination questionnaires were completed at each of the follow-up time points and by both study arms.

7.7.7 NCD risk-behaviours – prevalence, knowledge and attitudes

7.7.7.1 Questionnaire

To measure the smoking, diet and physical activity levels of participants, and their knowledge and attitudes towards these areas, a self-report questionnaire was utilised. Self-report questionnaires have been used in previous research exploring the health of prisoners in numerous areas, such as drug use (Swann and James, 1998; User Voice, 2016), mental health (Birmingham, 2003), smoking (Plugge et al., 2006; Carnie et al., 2013), diet (Carnie et al., 2013; Plugge et al., 2006) and physical activity (Plugge et al., 2006; Fischer et al., 2012), suggesting that the adoption of a self-report method in the prison environment would be accepted and feasible. Indeed, the findings from the phase one prisoner focus groups and staff interviews unanimously concurred that the most appropriate method of measuring change in the behaviour and knowledge of the

participants attending the peer-led intervention would be through directly asking participants. For these reasons, a future trial would consider collecting NCD prevalence, knowledge and attitude data via a self-report method, and thus one of the aims of this second phase of this research was to explore the feasibility of collecting such data from participants over a sustained follow-up period.

When using questionnaires to measure particular phenomena, there is a clear emphasis on researchers using pre-existing, standardised tools that have undertaken rigorous reliability and validation testing (Gjersing et al., 2010). The reliability of a questionnaire concerns the reproducibility and consistency of that questionnaire (Bowling, 2009), while the validity of a questionnaire refers to its ability to measure accurately the phenomenon it intends to measure (Gjersing et al., 2010). The benefits of using existing validated questionnaire tools are that they enhance the comparability of research findings across different studies, and also increase the confidence that the researcher has indeed measured accurately the phenomenon intended to be measured by the questionnaire (Boynton and Greenhalgh, 2004; Gjersing et al., 2010). Although there is an emphasis on using existing questionnaires that have been rigorously tested for reliability and validity, it has been acknowledged that such validated tools may not always be appropriate, particularly in instances where these questionnaires have been developed and validated in different contexts, cultures and settings (Best and Day, 2010; Bowling, 2009; Gjersing et al., 2010). As acknowledged by Best and Day (2010) and Gjersing et al. (2010), in such instances, the existing validated questionnaire may not be sensitive to the specific context in which the new research study is being conducted. For instance, a questionnaire enquiring about participants' physical activity that used examples such as snow sports would not necessarily be relevant in warmer countries where there is little or no snow. In these instances, it is acknowledged that adaptation of existing validated questionnaires, or the development of a new tool altogether, may be required to ensure that the questionnaire tool being used to measure phenomena of interest is sensitive to the setting and context in which the research study is being conducted (Bowling, 2009; Boynton and Greenhalgh, 2004; Best and Day, 2010; Midanik and Drescher-Burke, 2010; Sousa et al., 2017).

For the second phase of the PhD study, the researcher was unable to find an existing validated questionnaire tool measuring NCD risk-behaviour prevalence, knowledge and attitudes that would be appropriate to be utilised in the prison setting. While the researcher found numerous validated questionnaires, such as the WHO STEPS Instrument (WHO, 2008), the Global Adult Tobacco Survey (Global Adult Tobacco Survey Collaborative Group, 2011) and the International Physical Activity Questionnaire (IPAQ) (IPAQ, 2002), upon reviewing these tools, it was evident that numerous questions contained within these tools were not appropriate for prisoners due to specific constraints posed by the prison setting. For instance, the WHO STEPS Instrument enquires about the addition of salt to food during the cooking process and bicycling to and from certain places, neither of which are relevant to prisoners. Similarly, the Global Adult Tobacco Survey enquires about participants' use of certain tobacco products that are not permitted for use within prisons, such as pipes and cigars. Due to the lack of sensitivity of the existing validated tools to the prison setting, the researcher took the approach of developing a new, nuanced questionnaire tool to measure prisoners' prevalence, knowledge and attitudes regarding the NCD risk-behaviours, one which was appropriate to be used in the prison setting.

The questionnaire was developed through adapting questions from a number of well-established and validated pre-existing surveys, namely the following tools; WHO STEPS Instrument (WHO, 2008), International Physical Activity Questionnaire (IPAQ) – Short (IPAQ, 2002), Health Survey for England (The NHS Information Centre, 2008), Community Interventions for Health Questionnaire (Community Interventions for Health, 2008), General Nutrition Knowledge Questionnaire for Adults (Parmenter and Wardle, 1999) and the RAND – 36 Item Health Survey (RAND Health, 1994). Indeed, this approach of adapting questions from existing validated questionnaires to make them more appropriate for prison contexts is well practised in the area of prison research (see for example; Auzoult and Abdellaoui, 2015; Bridgwood and Malbon, 1995; Fischer et al., 2012; Kauffman et al., 2010). The researcher does acknowledge that when taking this approach of adapting questions from existing validated tools to develop a new tool, the previous assessment of the reliability and validity of the questions may not necessarily hold for the new developed tool (Creswell, 2014), and thus it is

important to establish the reliability and validity of the new tool developed through rigorous testing (Best and Day, 2010; Bowling, 2009; Creswell, 2014).

The questionnaire developed (see Appendix 30) was split into five sections and consisted primarily of closed-ended questions with pre-defined response categories. The first section collected data regarding the socio-demographic characteristics of participants, including their age, ethnicity, living arrangements prior to imprisonment, employment status prior to imprisonment and previous prison experience. This first section regarding demographics was only included in the baseline data collection wave, and was omitted from the questionnaire used in the three-follow-up data collection time points, as such data was not required to be collected again.

The second section pertained to the general health of participants and contained two questions from the RAND – 36 Item Health Survey (RAND Health, 1994), whereby participants were asked to rate their general health overall, and compare their general health now to how they perceived it to be a year ago; both items required a response on a 5-point Likert-scale. The remaining three questions in this section were taken and adapted from the Community Interventions for Health Survey (Community Interventions for Health, 2008), and queried the prevalence of a long-term physical or mental health condition, whether participants were receiving medication(s) for any long-term conditions, and whether or not participants believed that making lifestyle changes could help to manage NCDs. This second section assessing general health was included in the questionnaire used at baseline and at all three-follow-up time-points.

The third, fourth and fifth sections of the questionnaire were concerned with measuring the prevalence, knowledge and attitudes of participants regarding smoking, diet and physical activity respectively. The questions used within these three sections came from a number of well-established and validated pre-existing surveys, namely; WHO STEPS Instrument (WHO, 2008), International Physical Activity Questionnaire (IPAQ) – Short (IPAQ, 2002), Health Survey for England (The NHS Information Centre, 2008), Community Interventions for Health Questionnaire (Community Interventions for Health, 2008) and the General Nutrition Knowledge Questionnaire for Adults (Parmenter and Wardle, 1999). These three sections measuring prevalence, knowledge and attitudes regarding

smoking, diet and physical activity among participants were included in the questionnaire used at baseline and at all three-follow-up time-points.

As discussed earlier in this section, when developing new questionnaire tools through adapting questions from existing surveys, which was the approach taken for this study, it is important to establish the reliability and validity of the new tool developed through rigorous testing. Such testing should include piloting of the questionnaire, assessing its test-retest reliability, examining the internal consistency of the tool and assessing its face and construct validity (Bowling, 2009; Creswell, 2014). It is well acknowledged in the literature that the assessment of newly developed tools through the undertaking of such tests can be a highly time-consuming process (Bowling, 2009; Sousa et al., 2017). As such, and due to the time constrains of the PhD project, not all of the recommended reliability and validation testing of the questionnaire tool was undertaken. The remainder of this section discusses the testing of the questionnaire that was undertaken prior to use of the questionnaire in the phase two feasibility study, with reference made to where future testing is still required.

One of the quality checks of the developed questionnaire that was undertaken was the establishment of the face validity of the tool. The finalised draft of the questionnaire was checked by a panel of individuals with experience in the area under study to ensure that they felt that the questionnaire was measuring the concepts that it was intending to measure. This panel consisted of the researcher's supervisory team, four members of clinical staff within the prisons and two members of prison staff from the prison establishments. Prior to these individuals seeing the questionnaire, an explanation was provided to them regarding what was intended to be measured by the questionnaire. The feedback received from the panel during this exercise was that the questionnaire was deemed suitable to measure the prevalence, knowledge and attitudes of participants' smoking, diet and physical activity. However, two minor issues were highlighted. One panel member suggested moving one of the questions measuring diet prevalence to later on in the diet section, as they felt that having it before the knowledge questions could influence the response of participants to the knowledge questions; this amendment recommendation was undertaken. A second panel member suggested that one of the questions measuring physical

activity levels was overly complex in its language, advising it be re-worded so that it was simpler to understand; again this recommendation was taken on board and carried out. The panel re-checked the edited questionnaire and approved its use for the second phase of the research.

Following establishing face validity, the finalised questionnaire was piloted on 10 prisoners; five from Prison A and five from Prison B. During this pilot exercise, the pilot participants were provided with a participant information sheet and consent form. The feedback regarding the information sheet and consent form was positive, with pilot participants reporting these documents being easy to follow and the language pitched at an appropriate level. The pilot participants then self-completed the questionnaire. On average, it took them approximately twenty-five minutes to complete the questionnaire. When queried on how they had found completing the questionnaire, the feedback was again positive. They suggested that the questionnaire was easy to follow and understandable.

When asked about their thoughts on the length of the questionnaire, the pilot participants agreed that it was lengthy, but they felt that it needed to be to measure the aspects of their lifestyles that were intended to be measured. The pilot participants suggested that rather than asking participants to self-complete, instead the researcher should assist participants with completion, as this would likely reduce the time required for questionnaire completion and would also mitigate against cases where participants had very poor literacy levels. In response to this suggestion, the researcher asked the pilot participants if they thought researcher-assisted completion would likely influence the responses that participants gave to the questionnaire (i.e. the provision of socially desirable answers). Pilot participants suggested that they did not think this would likely occur, as the questionnaire was querying about aspects of lifestyle which are not against the prison rules and regulations. It was suggested that dishonest answers would be more likely to occur if the questionnaire had been asking questions around illicit behaviours that conflict with prison regulations, such as violent behaviour and drug use, which it did not. In light of this feedback from the pilot exercise, no changes were made to the questionnaire, as no adjustments were suggested. However, the decision was made to employ a researcher-assisted completion method rather than a self-completion method.

Due to the time constraints of the PhD project, it was not possible to assess the test-retest reliability of the tool, its internal consistency nor its construct validity, and thus there remains unanswered questions pertaining to the reliability and validity of the questionnaire tool. This was deemed as an acceptable limitation at the outset of the study however, as this PhD study was exploratory in nature, being primarily concerned with assessing the feasibility of undertaking a future definitive study as opposed to exploring the effectiveness of the peer-led intervention in modifying prisoners' NCD risk-behaviours. It is acknowledged that before using this tool in a definitive trial however, the validity and reliability of the questionnaire tool would need to be further explored. This is discussed further in the final discussion chapter.

The questionnaire was completed with all participants at all time-points of the phase two study. The questionnaire was first completed by participants at their respective prison establishment at baseline, prior to their randomised allocation to the intervention or control study arms. The questionnaire was then completed by participants at follow-up time point one (immediately post-intervention), follow-up time point two (one-month post intervention) and follow-up time point three (three-months post-intervention).

During the follow-up data collection periods, a number of the participants were no longer present at the prison establishments where the research was taking place, as they had been either transferred or released. In cases where participants had been transferred to another prison that was not one of the research sites, the researcher tried to establish contact with the healthcare provider at the prison sites that the participant had been transferred to, in order to arrange for the participants to complete the follow-up questionnaires. In instances where participants had been released, the researcher tried to contact the participants on the telephone number(s) that they had provided during the provision of informed consent at the beginning of the study. Where successful contact was made with released participants, the questionnaire was completed with participants over the telephone.

7.7.7.2 Verification of self-reported smoking, diet and physical activity prevalence

In addition to measuring prevalence of smoking, diet and physical activity through a self-report questionnaire, where possible, data was collected to verify the self-reported data, as again, such verification measures would be considered as data collection tools in a future definitive trial. This is because previous research has questioned the accuracy of self-reported lifestyle data as an indicator of prevalence taken alone (Prince et al., 2008; Gorber et al., 2009; Spark et al., 2016). To verify self-reported smoking behaviour, a Bedfont New Pico Carbon Monoxide Monitor Smokerlyzer was used. Each participant was asked to take a deep breath in, hold their breath for fifteen seconds and then blow into the tube connected to the CO monitor. A reading was then displayed on the screen of the monitor identifying the amount of CO present in the participants breath sample; this was displayed in parts per million (ppm). Readings of < 10ppm indicated that the participant had not been smoking, and readings of ≥ 10ppm indicated that the participant had been smoking. As with the self-report measures, the CO levels of participants were measured at all time-points during the study. Where participants had been released or transferred over the three follow-up periods, it was not possible to measure their CO levels, as the follow-up was not completed face-to-face, and was usually completed over the telephone.

The verification of self-reported diet and physical activity levels among participants proved more difficult. Originally the researcher had hoped to verify these through the checking of participants' menu choices and a pedometer respectively, with both of these methods suggested in the phase one qualitative study. However, the security department of the prison establishments advised that the provision of pedometers to participants would not be approved for security reasons. With regards to checking the menu choices made by participants to verify diet, the researcher liaised with the kitchens department at each of the prison establishments to discuss how best to achieve this. The staff working in the kitchens advised that this would not be possible as once the menus had been processed by the kitchens, they were sent out to the company responsible for the provision of food to the prisons and were not returned.

In light of these difficulties, proxy measures relating to modifications in diet and physical activity were obtained for each participant. These consisted of taking the height and weight of each participant so that their body mass index (BMI) could be calculated. The height of each participant was only taken at the baseline data collection time point. The recording of weight and subsequent calculation of BMI was undertaken at baseline, follow-up one, follow-up two and follow-up three. Again, where participants had been released or transferred during the follow-up period, it was not possible to measure their weight as the follow-up was not undertaken in person. Further information regarding the calculation of weight and BMI during the follow-up periods is presented in the results section.

7.7.8 Wellbeing

As well as measuring the smoking, diet and physical activity levels of participants, their wellbeing was also measured. The primary rationale for measuring this concept was that it was suggested by both prisoners and staff during the phase one qualitative research to be an important aspect of an intervention aiming to modify lifestyle behaviours, and thus would be considered as an important secondary outcome measure in a future definitive trial. As with the prevalence of smoking, diet and physical activity, a self-report method was utilised to measure wellbeing. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) developed by Tennant et al. (2007) was used by to measure the wellbeing of participants (see Appendix 31). This tool was chosen as it is a well-established validated tool already used widely to measure wellbeing across different populations, including large scale population surveys such as the Health Survey for England (Michaelson et al., 2012). Furthermore, it has been successfully used as a tool to measure wellbeing among prisoner samples in the UK (Jaffe, 2012b; Broderick and Carnie, 2016; Farrier et al., 2016). The tool is also short and takes minimal time to complete. It felt appropriate to adopt a short tool requiring little time to complete to measure wellbeing to ensure that the time-burden for completion of data collection tools was minimised.

The WEMWBS tool presents participants with 14 statements relating to their wellbeing. Participants are instructed to consider each of the statements and tick the appropriate response that best describes how they have felt in relation to the statement over the previous two weeks. The pre-defined responses available for

participants to tick are as follows; none of the time (1), rarely (2), some of the time (3), often (4), and all of the time (5). Upon completion of the questionnaire tool, a total wellbeing score is then calculated through summing the responses of participants. Lower total scores are indicative of lower levels of wellbeing, while higher total scores are indicative of higher levels of wellbeing. Both intervention and control participants completed this wellbeing tool at baseline prior to randomisation, and then again at the three-follow-up time points post-intervention.

7.7.9 Completion rate

As discussed in the previous subsections, data was collected from participants at numerous time points throughout phase two of the research; baseline, follow-up one, follow-up two and follow-up three. Table 7-1 summarises each of the measures that were intended to be collected from participants at each of the time points. An analysis was undertaken to explore whether participants were retained in the study over the full follow-up period, and whether all tools were completed by participants as intended; further details regarding this analysis are presented in the data analysis section later on in this chapter.

Table 7-1: Outcome measures collected at each time-point

	Baseline	Follow-up 1	Follow-up 2	Follow-up 3
Main questionnaire assessing smoking, diet and physical activity – prevalence, knowledge and attitudes	X	X	X	X
Wellbeing questionnaire (WEBWMS)	X	X	X	X
CO reading	X	X	X	X
Height reading	X			
Weight reading	X	X	X	X
BMI calculation	X	X	X	X
Contamination questionnaire		X	X	X
Intervention acceptability questionnaire*		X		

*The intervention acceptability questionnaire was completed by intervention arm participants only

7.8 Data management

To ensure confidentiality, all data collected throughout this phase of the study were stored in line with the regulations set out by The Data Protection Act 1998 (The Data Protection Act, 1998). The screening logs, peer-group attendance registers, intervention fidelity checklists/field-notes and completed participant questionnaires were kept in a locked filing cabinet within a healthcare office at each of the two prison sites. Only the researcher had access to these filing cabinets. Unique participant identification numbers were allocated to each participant and noted down on the front of the completed questionnaires. A master key electronic document linking the participant names with their unique participant identification number was kept on a password protected computer only accessible to the researcher.

The completed consent forms and contact details in case of release for each participant were kept in a separate locked filing cabinet within a healthcare office at each of the two prison sites; again, only the researcher had keys to access these filing cabinets. After the final data collection follow-up was complete, three-months post-intervention, all hard-copy documentation relating to the study were transferred from each of the two prisons to the head office of the study sponsor (Spectrum CIC) and stored as they had been previously in the prisons. This transfer of documentation was required as the researcher had their office space within the prisons revoked once all the data had been collected, and thus there was no longer a guarantee of safe data storage within the prisons.

All of the data collected from participants through the questionnaires was entered into a statistical database developed by the researcher using IBM SPSS Statistics for Windows version 22 (IBM Corp, 2013). The statistical database was saved on a password protected computer only accessible to the researcher. No person identifiable information was entered into the statistical database, as the unique participant numbers assigned to participants were entered instead of participant names or prisoner numbers. All collected data will be kept for five years post completion of the study, as this is a requirement of the study sponsor and was stated in the ethical approval application form that was given favourable opinion by the NHS REC.

7.9 Primary data analysis

As this second phase of the research was a feasibility study aiming to inform the development of a definitive randomised controlled trial to explore the effectiveness of a peer-led intervention in modifying NCD risk-behaviours among prisoners, the primary analysis focussed on the feasibility objectives identified earlier in this chapter. This analysis mostly involved obtaining descriptive statistics, such as percentages, means and medians, with only selected inferential statistical tests undertaken. Where descriptive analysis was undertaken, continuous data are presented using means and standard deviations (*SD*), except in the case of non-normally distributed data where medians, inter-quartile range (*IQR*) and ranges are presented instead. Categorical descriptive

data are presented using the number and percentage of participants within each of the categories.

All analyses were performed on an intention to treat basis (ITT), whereby all participants were included in the analysis according to their original random allocation (Hollis and Campbell, 1999; Gupta, 2011), unless specified otherwise. This is recommended as the preferred analysis strategy in the CONSORT guidelines for reporting randomised controlled design studies (Moher et al., 2010; Gupta, 2011). The remainder of this section presents how data relating to each feasibility objective were specifically analysed.

7.9.1 Screening and recruitment

From the screening log, a number of calculations were made. The length of time it took to recruit and consent the target of 80 participants into the trial is presented, along with the percentage of participants that were screened but were ineligible, and the percentage that were screened but took the decision not to participate in the study. Where reasons were given for non-participation, the percentage citing a particular reason for non-participation are presented. The baseline demographic and criminological characteristics of the 80 participants that did participate in the trial were also analysed. The characteristics were calculated for each study arm and for the sample as a whole. For the continuous variables (age and previous length of time spent in custody), means and *SDs* were calculated. For the other variables, which were all categorical (prison site, ethnicity, housing status prior to imprisonment, employment status prior to imprisonment, been in prison before and long-term condition prevalence), the number and percentage of participants falling within each category were calculated. Formal inferential tests exploring significant differences between the intervention and control participants on baseline characteristics was not undertaken, as this is not recommended in the leading guidelines for the conduct of randomised controlled trials (Moher et al., 2010). In this context, significance testing is unnecessary and illogical, as these tests explore whether any observed differences between study arms are not due to chance, when it is almost certain that any differences are due to chance by the very nature of randomisation (Moher et al., 2010; de Boer et al., 2015).

7.9.2 Randomisation acceptability

As mentioned earlier in this chapter, randomisation acceptability was measured at various time points throughout the trial. Through analysis of the screening log, the percentage of participants screened that refused to participate in the trial due to the process of randomisation was calculated. An analysis of the recruitment and follow-up spreadsheet was also undertaken; here the proportion of the 80 participants that were recruited and randomised that expressed disappointment at their random allocation was calculated, as was the proportion of participants that withdrew from the trial due to their random allocation. Given that a reason for discontinued participation was not always provided at the follow-up time points, a comparison was made between the number of intervention and control participants that were, and were not, retained in the trial at each of the follow-up time-points. Further details regarding this analysis are presented later in the subsection dedicated to completion rate.

7.9.3 Intervention attendance

The attendance register was utilised to calculate the percentage of intervention sessions attended by the intervention arm participants. Results are presented for the arm as a whole and according to prison site. The median number of sessions attended by intervention arm participants was also calculated. To decipher the main reasons for non-attendance, the proportion of intervention arm participants citing specific reasons for non-attendance were calculated and are presented.

7.9.4 Intervention fidelity

The four checklists that were completed by both the researcher and the independent member of healthcare staff were analysed to compare levels of agreement on whether or not the intervention components had been delivered as planned. This was analysed through use of a Cohen's Kappa statistical test. The Cohen's Kappa statistic was interpreted using Altman's (1991) guidelines.

Following this checking of reliability, a descriptive analysis was undertaken on the intervention fidelity checklists completed by the researcher. This analysis calculated the proportion of individual intervention components each week that were delivered; fully as intended, partially delivered or not delivered at all. From this, an overall calculation was made of the number of sessions in which all

components were delivered fully as intended; the results are presented for each of the two prison sites separately and according to whether the session was a morning or an afternoon session. In addition to this quantitative analysis, the field-notes taken during each of the peer-intervention sessions were analysed thematically. This qualitative analysis was aimed at identifying themes across the sessions.

7.9.5 Intervention acceptability

7.9.5.1 Quantitative analysis

The five questions asking participants to rate their level of agreement with each statement were analysed descriptively, with results presented as the proportion of participants that agreed/disagreed with each statement. Similarly, the responses to the question regarding the overall helpfulness of the intervention, and the eight specific questions where participants were asked to rate the helpfulness of certain aspects of the intervention, were also analysed descriptively, with the results presenting the percentage of participants that found the intervention and the specific aspects as helpful/not helpful. The percentage of participants that stated they would recommend the intervention to other prisoners and the proportion that stated they would like the intervention repeated on them were also calculated.

7.9.5.2 Qualitative analysis

All of the free text responses to the open-ended questions contained throughout the intervention acceptability questionnaire were analysed thematically. These open-ended questions were focussed on why participants found the intervention helpful/unhelpful, successful/unsuccessful, the most successful aspects of the intervention, the least successful aspects of the intervention, what could be done to improve the intervention and if the participants had anything else they would like to say about the intervention overall. For each of these questions, the verbatim responses were analysed thematically following the process identified by Braun and Clarke (2006). The responses to each question were read and re-read to ensure familiarity with the data set. Following familiarisation with the data, initial coding was performed where labels were assigned to the text which reflected the raw open text responses. Following this initial stage, codes were

combined to generate overarching themes. The themes generated were then reviewed to ensure the responses used to support each theme were consistent and that the themes were an accurate representation of the data. The final stage in the process involved assigning a meaningful name to each of the themes generated. The coding process and the final themes generated by the researcher were independently checked by one of the researcher's supervisor's to ensure rigour and trustworthiness of the analysis (Barbour, 2001). A good level of agreement was demonstrated.

7.9.6 Contamination to the control group

For each of the contamination questions asked of the control and intervention participants, the responses of participants over the three follow-up time-points were collated to create an overall variable representing their response to the question over the whole trial period. For example, for the question asking whether or not control participants had been shown any of the health information from the intervention sessions, if participants answered 'yes' to this at any one of the three follow-up periods, then their overall response to the question over the trial period was calculated as a 'yes'. In contrast, if control participants answered 'no' in response to this question at all three follow-up periods, then their overall response to the question over the trial period was calculated as 'no'. Some participants responded to the questions through stating that they 'were not sure', in these instances participants' responses were recorded as 'not sure'. The decision was taken to create an overall response representing the whole trial period, as the researcher was purely interested in whether or not contamination had occurred, rather than exploring at which time-point specifically contamination occurred. Following collation of responses in this way, the percentage of intervention and control participants responding yes, no or not sure to each of their respective contamination questions was calculated. Responses are presented according to prison to highlight any potential differences in levels of contamination at each of the two prison sites.

7.9.7 Completion rate

Participant retention in the trial over the study follow-up period was analysed through calculating the proportion of participants that were successfully followed-

up and completed the data collection measures at each of the three follow-up time points. For those that were not retained at each of the follow-up periods, where possible reasons for attrition were noted; the proportions that were not retained for a specific reason (i.e. withdrawal or unable to successfully contact at follow-up) were calculated from this data.

Consideration was also given to whether or not there were differences in the characteristics between those that were and were not retained at each of the follow-up time-points. This was done initially through comparing the descriptive baseline demographic and criminological characteristics of those that were and were not retained; continuous variables were compared through examining means and *SDs*, while categorical variables were compared through exploring the percentages falling into each of the categories. Following this, inferential testing was undertaken to explore if there were any significant differences in baseline characteristics between those that were retained versus those that were lost to attrition; in the case of continuous variables, independent t-tests were undertaken, and in the case of categorical variables, Pearson's chi-squared tests were utilised. Given that the study sample was relatively small, for the purposes of this analysis, in cases where categorical variables had more than two responses, the response variables were collapsed to meet the assumption of the Pearson chi-squared test; i.e. the lowest expected frequency in any cell being five or more (Pallant, 2016). Thus, ethnicity was recoded into 'White' and 'non-White', housing status was recoded into 'living in stable accommodation prior to imprisonment' and 'living in unstable accommodation prior to imprisonment', and employment status was recoded into 'in some form of employment prior to imprisonment' and 'unemployed prior to imprisonment'. In addition to analysing participant retention over the trial period, the proportion of participants that completed each of selected measures at the relevant time points was calculated, to explore whether all data collection tools were fully completed by participants that had agreed to participate at that respective time-point.

7.10 Secondary analysis

As well as analysis of the feasibility data described above, analysis of the outcome measures that would be of interest in a future definitive trial was

undertaken to explore the potential efficacy of the intervention. As with the primary analyses, all of the secondary analyses were performed on an ITT basis unless specified otherwise.

Given that this study was a feasibility study, and thus not powered to detect significant differences between groups, the analyses undertaken were primarily descriptive in nature. For continuous variables, means and *SDs* were calculated, except in cases where the data were found to be not normally distributed; in such cases medians, *IQR* and ranges were calculated instead. For categorical variables, the number and percentage of participants falling within each of the specified categories were calculated.

Although not designed at the outset to have the power to detect significant changes between groups, inferential statistical analyses were conducted on the prevalence data. This was undertaken to explore the feasibility of conducing the statistical tests that would be required to be undertaken for a future definitive trial. Further details regarding the inferential statistical tests employed are presented in the relevant section below.

All of the descriptive analyses were undertaken using IBM SPSS Statistics version 22 (IBM Corp, 2013), while the inferential statistical analyses were undertaken in Stata version 13 (StataCorp, 2013). The remainder of this section provides details pertaining to how the data relating to NCD risk-factor behaviour, knowledge and attitudes were analysed.

7.10.1 Smoking, diet and physical activity prevalence

7.10.1.1 Agreement between self-reported and CO verified smoking

For all of the data time-points, levels of agreement between self-reported smoking and CO verified smoking were calculated through generating a cross-tabulation table displaying agreement between the measures. The levels of agreement between the two measures for each time-point (except baseline) were then calculated through the use of a Cohen's Kappa statistical test, with the test statistic interpreted using the guidelines of Altman (1991). The Cohen's Kappa test was unable to be conducted on the data collected at baseline, as the assumption regarding an equal number of categories was not met at this time point.

In light of the findings from these tests, which are discussed in the following Phase Two Results Chapter, the decision was made to use the self-reported smoking prevalence data in the subsequent descriptive and inferential analyses. This was primarily due to the potential limited specificity of the CO measure, and the difficulties obtaining CO readings over the follow-up periods, both of which are discussed in more detail in the following chapter.

7.10.1.2 Descriptive analyses

For smoking, the proportion of participants within each study arm that self-reported to be smoking at baseline and each of the three follow-up time-points were calculated and compared. Of the participants that reported to be smoking cigarettes on a daily basis, the median number of cigarettes per day smoked by participants in each study arm were calculated.

In terms of diet, the proportion of participants within each study arm reporting to eat five or more portions of fruit and vegetables per day at each of the study time-points were calculated and compared. For those participants that did report to consuming fruit and vegetables, the median number of days per week each of these types of food were consumed was calculated for each time-point, as were the number of both fruit and vegetable portions consumed per day by participants; comparisons were made according to study arm. The proportion of participants that self-reported to adding salt to their food prior to tasting it was also calculated, as were the median number of days per week that participants reported to consume foods high in salt; these calculations were again conducted for each time-point with comparisons drawn between study arms.

For physical activity, the proportion of participants within each study arm reporting to undertake the recommended 150 minutes or more of physical activity per week at each of the study time-points were calculated and compared. Participants were also asked how many days of moderate physical activity they had undertaken in the previous week, and for how many minutes they had undertaken it on one of those days. As per the IPAQ analysis guidelines (IPAQ, 2004), the responses of participants to these two questions were computed to create a new variable calculating how many minutes of moderate physical activity participants had undertaken the previous week; this was calculated for each of the four-study time-points. The percentage of participants in the intervention and control arms

reporting to have undertaken moderate physical activity in the previous week was calculated, along with the median number of minutes participants in each study arm reported undertaking moderate physical activity for. Comparisons were made between study arms over the trial period. The same analysis was also undertaken on the data pertaining to participants' levels of vigorous physical activity.

7.10.1.3 Inferential analyses

Following these descriptive analyses, multi-level logistic regression models were utilised to explore differences in smoking, diet and physical activity levels between the two study arms across the full trial period. This method of analysis was chosen for two reasons. The first was due to the nested structure of the data; smoking, diet and physical activity prevalence was measured among participants from two different prisons over four time-points. This implied a nested structure to the data, whereby repeated measures were nested within participants, who were nested within prisons. This three level nested structure to the data violates the assumption of independence of observations required to undertake traditional forms of logistic regression (Nezlek, 2008; Peugh, 2010). Ignoring this nested structure to the data and using traditional logistic regression methods can lead to biased estimates of regression parameters and an increased chance of making Type I errors, and thus proceeding with traditional regression modelling is not recommended (Peugh, 2010). In contrast, multi-level models do not require observations to be independent of one another, and thus they are particularly appropriate to use when analysing nested data (Nezlek, 2008; Gibbons et al., 2010; Peugh, 2010).

A further rationale for the use of multi-level models for the analyses was because it was anticipated that attrition would occur over the follow-up periods, as many research studies involving follow-up of prisoners in the UK have reported difficulties with attrition over study follow-up (Adler and Mir, 2012; Brunton-Smith et al., 2014; Hartfree et al., 2008). An advantage of multi-level models are that they do not require complete data sets from all participants to undertake the analysis (Gibbons et al., 2010; Field, 2009), and therefore the use of multi-level models would enable the researcher to undertake the analyses without excluding

those participants for whom a complete data set was not obtained. The remainder of this section details the development of the multi-level models.

Four multi-level models were undertaken in total; one exploring self-reported smoking prevalence, two assessing self-reported diet (one for fruit and vegetable intake and one for salt intake) and one exploring self-reported levels of physical activity. Multi-level logistic regression modelling was adopted as the outcome variable in each of the four models were all categorical. For smoking behaviour, participants were either categorised as smokers or non-smokers; for fruit and vegetable intake, participants were categorised as either meeting or not meeting the recommendation of consuming five or more portions of fruit and vegetables per day; for salt intake, participants either added salt to their food or they did not; and for physical activity, participants either met the national recommended guideline of undertaking 150 minutes or more of physical activity per week or they did not meet the recommendation.

Although the nested structure of the data suggested a three-level model be adopted for each outcome variable, with repeated measures (level 1) nested within participants (level 2) nested within prisons (level 3), this was not possible as there were few too prisons to constitute the prison being added as a third level. As a result, each of the four multi-level models developed took the form of a two-level model whereby repeated measures of the outcome variable (level 1) were nested within participants (level 2). For each model, the prison the participants were residing in at baseline was added as a fixed predictor instead of a third level variable, which is recommended when numbers are too small to constitute a variable being included as a level (Tabachnick and Fidell, 2014). As the main focus of the analysis was to explore trends in the outcome variables between the intervention and control study arms over time, study arm was included as a predictor variable in each of the four models. In addition to study arm, numerous other predictor variables were added to the models reflecting the socio-demographic and criminogenic characteristics of the participants. When deciding upon these predictor variables to include in the models, consideration was given to those variables deemed theoretically important based upon previous evidence of such variables influencing smoking, diet and physical activity behaviour. Table

7-2 presents the predictor variables included in each of the four multi-level models, with rationale for their inclusion provided.

Prior to building each of the four models in full with the random effect and predictor variables, a null model for each outcome variable was run to determine whether or not multi-level modelling was appropriate. For each of the four models, a null random effects model containing only a random effect for individual and an intercept was compared to an intercept-only single-level model using a likelihood ratio test, to check whether the addition of a random effect was necessary and a substantial improvement.

Before examining the results of the final models, each of the models were checked to ensure they met the assumptions of multi-level logistic regression modelling. This involved visual inspection of the deviance residual plots to check the validity of the models; this revealed that there were no highly influential data points/outliers. The models were also checked through a collinearity diagnostics test to ensure there was no multi-collinearity between any of the predictor variables included in the models; there was no evidence of multi-collinearity in any of the models as all tolerances were >0.10 and all VIFs (Variation Inflation Factors) were <10.

The fixed effect coefficients generated by each of the models were transformed into odds ratios (ORs) to aid interpretation of the results of the models. The results of the four multi-level models are presented in tabular format in Chapter 8. The ORs of the fixed effect predictor variables that were generated by the model were examined to see if there were any trends in the predictor variables included in the model that may need further consideration in a future trial (i.e. were there any differences according to study arm, prison, age, ethnicity, housing status, employment status, previous experience of imprisonment and long-term condition status). Regarding this latter analysis, it is important to note that these results should be interpreted with caution, as the study was a feasibility study and thus not powered to detect differences between groups. Moreover, for some of the variables, such as ethnicity and housing status prior to imprisonment, there was little variation among participants which thus further limited this exploratory analysis.

Table 7-2: Variables included in each of the four multi-level models along with rationale for inclusion*

Multi-level model	Variables included in the model	Rationale for inclusion of variables
Smoking model	Repeated measures	Nested data structure – level 1 variable
	Participant	Nested data structure – level 2 variable
	Prison	Nested data structure – variable unable to be included as a third level due to small number of prisons. Included as fixed predictor variable instead
	Study arm	To explore trends over time between the two study arms
	Age	Evidence that smoking is more common in younger age groups (16-34 years of age), with smoking the least common in the 60+ age group (ONS, 2016)
	Housing status prior to imprisonment	Evidence that smoking prevalence rates higher among those of lower socio-economic status and from socially deprived and disadvantaged backgrounds (Hiscock et al., 2012; Action on Smoking and Health (ASH), 2016a); this variable deemed to be indicative of lower socio-economic status and social disadvantage
	Employment status prior to imprisonment	Evidence that smoking is more prevalent in those unemployed versus employed (ONS, 2013). Also evidence that smoking prevalence rates higher among those of lower socio-economic status (Hiscock et al., 2012; ASH, 2016a); this variable deemed to be indicative of lower socio-economic status
	Previous experience of imprisonment	Evidence that smoking prevalence rates higher among those of lower socio-economic status and from socially deprived and disadvantaged backgrounds (Hiscock et al., 2012; ASH, 2016a); this variable deemed to be indicative of lower socio-economic status and social disadvantage
	Suffers from a long-term physical or mental health condition	Evidence of an association between suffering from at least one long term physical condition and smoking (ASH, 2016b). Also evidence of higher prevalence of smoking among those with a mental health condition (Royal College of Physicians and Royal College of Psychiatrists, 2013)

Table 7-2 continued: Variables included in each of the four multi-level models along with rationale for inclusion*

Diet fruit and vegetable model	Repeated measures	Nested data structure – level 1 variable
	Participant	Nested data structure – level 2 variable
	Prison	Nested data structure – variable unable to be included as a third level due to small number of prisons. Included as fixed predictor variable instead
	Study arm	To explore trends over time between the two study arms
	Age	Evidence of an association between age and fruit and vegetable consumption; 16-24 years of age group the least likely to consume five or more portions of fruit and vegetables per day (Roberts, 2014)
	Ethnicity	Evidence of association between fruit and vegetable consumption and ethnicity, with some minority ethnic groups in the UK more likely than the general population to consume five or more portions of fruit and vegetables per day (HSCIC, 2006; Leung and Stanner, 2011)
	Housing status prior to imprisonment	Evidence that consumption of fruit and vegetables are much lower among those from more disadvantaged backgrounds (Public Health England, 2014b); this variable deemed to be indicative of disadvantage
	Employment status prior to imprisonment	Evidence that consumption of fruit and vegetables are much lower among those from more disadvantaged backgrounds (Public Health England, 2014b); this variable deemed to be indicative of disadvantage
	Previous experience of imprisonment	Evidence that consumption of fruit and vegetables are much lower among those from more disadvantaged backgrounds (Public Health England, 2014b); this variable deemed to be indicative of disadvantage
	Suffers from a long-term physical or mental health condition	Link between chronic disease and poor diet is well established (WHO, 2003) and thus it is reasonable to assume that there could be a variation in fruit and vegetable intake among those reporting to suffer from a long term physical or mental health condition versus those that do not

Table 7-2 continued: Variables included in each of the four multi-level models along with rationale for inclusion*

Physical activity model	Repeated measures	Nested data structure – level 1 variable
	Participant	Nested data structure – level 2 variable
	Prison	Nested data structure – variable unable to be included as a third level due to small number of prisons. Included as fixed predictor variable instead
	Study arm	To explore trends over time between the two study arms
	Age	Age has been found to be associated with activity, with increases in age negatively correlated with minutes of physical activity undertaken (Trost et al., 2003)
	Ethnicity	Evidence that levels of physical activity in individuals from some minority ethnic groups (Indian, Pakistani and Bangladeshi) much lower than in the general population (Sproston and Mindell, 2006)
	Housing status prior to imprisonment	Evidence that those from more deprived and disadvantaged social backgrounds are more likely to be physically inactive than those from less deprived backgrounds (Farrell, et al., 2014); this variable deemed to be indicative of social deprivation and disadvantage
	Employment status prior to imprisonment	Evidence that those from more deprived and disadvantaged social backgrounds are more likely to be physically inactive than those from less deprived backgrounds (Farrell, et al., 2014); this variable deemed to be indicative of social deprivation and disadvantage
	Previous experience of imprisonment	Evidence that those from more deprived and disadvantaged social backgrounds are more likely to be physically inactive than those from less deprived backgrounds (Farrell, et al., 2014); this variable deemed to be indicative of social deprivation and disadvantage
	Suffers from a long-term physical or mental health condition	Evidence that those suffering from long-term conditions report this to be a barrier to engaging in physical activity (Richmond Group, 2016) and thus it is reasonable to assume that physical activity engagement may be lower in those reporting to suffer from such conditions versus those that do not

Table 7-2 continued: Variables included in each of the four multi-level models along with rationale for inclusion*

Salt intake model	Repeated measures	Nested data structure – level 1 variable
	Participant	Nested data structure – level 2 variable
	Prison	Nested data structure – variable unable to be included as a third level due to small number of prisons. Included as fixed predictor variable instead
	Study arm	To explore trends over time between the two study arms
	Ethnicity	Evidence of associations between ethnicity and salt intake, with more ethnic minorities reporting to use salt in cooking than the general population (Sproston and Mindell, 2006)
	Housing status prior to imprisonment	Evidence of association between socio-economic status and salt intake, with intake found to be higher in those with a lower socio-economic status (Ji and Cappuccio, 2014); this variable deemed to be indicative of lower socio-economic status
	Employment status prior to imprisonment	Evidence of association between socio-economic status and salt intake, with intake found to be higher in those with a lower socio-economic status (Ji and Cappuccio, 2014); this variable deemed to be indicative of lower socio-economic status
	Previous experience of imprisonment	Evidence of association between socio-economic status and salt intake, with intake found to be higher in those with a lower socio-economic status (Ji and Cappuccio, 2014); this variable deemed to be indicative of lower socio-economic status
	Suffers from a long-term physical or mental health condition	Link between chronic disease and poor diet is well established (WHO, 2003) and thus it is reasonable to assume that there could be a variation in salt intake among those reporting to suffer from a long term physical or mental health condition versus those that do not

*For the purpose of the analyses, the following variables were collapsed to ensure that numbers within response categories were not too small; ethnicity (recoded into 'White' and 'non-White'), housing (recoded into 'living in stable accommodation prior to imprisonment' or 'living in unstable accommodation prior to imprisonment') and employment (recoded into 'in a form of employment prior to imprisonment' or 'unemployed prior to prison')

7.10.2 Smoking, diet and physical activity knowledge

7.10.2.1 Smoking

The questions pertaining to smoking knowledge covered three domains; the effects of first hand smoking, the effects of second hand smoking on adults and the effects of second hand smoking on children. For each of these three knowledge areas, overall smoking related knowledge in the domain was computed as the sum of correct answers to the questions within the domain. For the purpose of the analyses, correct was coded as 1, with incorrect and not sure coded as 0. Four questions were included measuring knowledge of the effects of smoking first hand, giving a highest possible score of four on this domain. Six questions measured knowledge on the effects of second hand smoking on adults, meaning the highest possible score in this domain was six. Seven questions measured knowledge relating to the effects of second hand smoking on children, giving a highest possible score of seven in this domain. Given that the knowledge scores were not normally distributed, the median total knowledge score for each of the three knowledge domains were calculated according to study arm; this was calculated for baseline and for each of the three follow-up periods.

7.10.2.2 Diet

Five questions measured knowledge regarding dietary habits leading to health problems, namely if the following behaviours could lead to health issues; low intake of fruit and vegetables, low intake of fibre, high intake of sugar, high intake of salt and high intake of fat. The responses of participants to these five questions were summed to create an overall diet knowledge score. For the purpose of this analysis, correct was coded as 1, with incorrect and not sure coded as 0. The highest possible overall knowledge score that participants could score was five. Descriptive analyses were undertaken to compare the diet related knowledge of participants in the intervention and control arm over the trial period. Specifically, the median total knowledge score for each study arm was calculated for baseline and each of the follow-up periods.

Participants were also asked if they knew the recommended intake of fruit and vegetable portions per day. Participants that responded to this question with either at least five or eight portions respectively were coded as correct, while

responses of not sure or any of the other responses below five portions were coded as incorrect. Descriptive analyses were then undertaken to compare the percentage of participants in each study arm that responded correctly to this question; this analysis was undertaken for all four time-points throughout the study.

7.10.2.3 Physical activity

The questionnaire asked participants in both study arms if they were aware of the guidelines regarding the amount of physical activity that adults should undertake on a weekly basis. A descriptive analysis was undertaken on the responses to this question at each trial time-point. These analyses compared the proportion of participants in each study arm that had either responded that they knew the guidelines, had heard of the guidelines but were not sure of the recommendations, or were not aware that there were any guidelines regarding physical activity levels.

Participants were also asked how many days per week and for how many minutes per week should adults undertake moderate physical activity to maintain good health. The responses of participants to these two questions were used to compute a new variable calculating how many minutes of moderate physical activity participants thought adults should undertake per week to maintain good health. Based upon the minutes suggested, participants were then coded as either; underestimating the recommendations if suggesting < 150 minutes, correctly estimating recommendations if suggesting =150 minutes, and overestimating recommendations if suggesting > 150 minutes. The percentage of participants within each arm that underestimated, correctly estimated or overestimated the weekly physical activity recommendations were then calculated for each time-point.

7.10.3 Smoking, diet and physical activity attitudes

7.10.3.1 Smoking

The attitudes of participants towards smoke-free rules in prisons, on public transport, at home, in the workplace and in schools were measured via the questionnaire. Descriptive analyses were undertaken on these data to calculate the percentage of participants within each of the two study arms that

agreed/disagreed with smoke-free rules in each of these five places; these were calculated for baseline and at each of the follow-up periods.

Attitudes towards barriers preventing participants from stopping smoking were also assessed through the questionnaire; only participants that reported to be smoking at each of the respective time-points were asked to respond to this question pertaining to barriers to cessation. Descriptive analyses were again undertaken to explore the percentage of intervention and control participants perceiving certain factors to be a barrier preventing them from stopping smoking; this analysis was conducted for each time-point throughout the trial with comparisons made according to study arm.

7.10.3.2 Diet

In the questionnaire, participants were asked about their attitudes about the potential of dietary habits making a difference in the chances of developing the following health conditions; heart disease, diabetes, cancer and high cholesterol. For each of the four time-points, the percentage of participants within each study arm that did believe that dietary habits could contribute towards the development of each of the health conditions were calculated; comparisons were made between the intervention and control arm.

The questionnaire also assessed participants' attitudes towards certain barriers preventing them from eating healthily. Examples of such barriers were lack of awareness of the health value of food and lack of choice. Given the categorical nature of the data, descriptive analyses were undertaken to determine the percentage of participants within the intervention and control study arms that perceived each factor to be a barrier towards them eating healthily. This analysis was conducted on the data collected at baseline and all three-follow-up time-points. Comparisons were made between the intervention and control arms.

7.10.3.3 Physical activity

In the questionnaire, participants were asked about their attitudes towards undertaking regular physical activity and health. Specifically, participants were asked if they agreed that participating in regular physical activity could be beneficial in terms of helping people to lose weight, reducing the risk of disease, reducing depression, strengthening muscles and improving heart and lung

fitness. Descriptive analyses were undertaken on these data to calculate the percentage of participants within each of the two study arms that agreed/disagreed that regular physical activity could be beneficial in each of the five health areas. These analyses were conducted at baseline and for each of the three follow-up periods.

The attitudes of participants towards barriers preventing them from undertaking physical activity were also assessed through the questionnaire. Examples of such barriers were lack of motivation, limited access to the gym and poor health. Descriptive analyses were again undertaken to compare the percentage of intervention and control participants that perceived certain factors to be a barrier preventing them from undertaking physical activity; this analysis was conducted for each time-point throughout the trial.

7.10.4 Wellbeing

As per the guidance in the WEMWBS user guide (Putz et al., 2012), a total wellbeing score was calculated for each participant through summing the 14 individual statement scores; this procedure was carried out for all time-points. The lowest possible wellbeing score was 14, while the maximum possible score was 70. Following this, the median overall wellbeing score for each of the study arms were calculated and compared. This procedure was again undertaken for all four of the study time-points.

7.11 Chapter summary

This chapter began by setting the context of the study in terms of the research setting and the ethical considerations pertinent to this phase of the PhD project. The chapter then provided a detailed discussion of the methods used by the researcher throughout the phase two study. This included a discussion of the choice of research design, the randomisation process used, the data collection tools utilised to collect data pertaining to each of the research objectives, and the chosen methods of data analysis. The following Phase Two Results Chapter presents the findings of the phase two study, with results of the feasibility analysis presented first, followed by the results from the secondary analysis.

Chapter 8 Phase Two Results

8.1 Introduction

This chapter presents the results from the phase two feasibility randomised controlled trial. The first half of the chapter focusses on the results pertaining to the feasibility objectives, these include; the screening and recruitment rate, randomisation acceptability, attendance at the peer-led intervention, intervention fidelity, acceptability of the peer-led intervention, contamination to the control group, retention of participants over the trial study period and the completion of individual data collection measures. The remainder of the chapter then presents the results on the efficacy of the intervention, particularly focusing on changes in the behaviour, knowledge and attitudes of participants with regards to the three NCD risk-behaviours.

8.2 Screening and recruitment

The recruitment phase to reach the target of 80 participants lasted approximately six weeks. In total, 109 potential participants were screened by the researcher. Of these, 17 did not meet the eligibility criteria to participate in the study, and 12 refused to take part. Figure 8-1 presents the CONSORT flow diagram summarising the screening and recruitment process.

As can be seen from Figure 8-1, a small proportion of the potential participants screened by the researcher made the decision not to participate in the study following meeting with the researcher to discuss the study further. The most cited reason for refusal to participate was that the potential participants found the process of randomisation to the study arms unacceptable (n = 3), while the second most cited reason was that the intervention would clash with other activities, such as work and association (n = 2). Only one potential participant stated that they had changed their mind about participating following obtaining further information about the study. Five potential participants did not provide a reason for non-participation. Approximately 16% of the potential participants

screened did not meet the eligibility criteria to participate in the study, with all of these participants ineligible due to the fact that they would not be remaining in the prison for the full duration of the intervention delivery. Eight of these were due to be released before completion of the six-week intervention and nine were noted as a high priority for transfer to another prison. More potential participants at Prison A were excluded due to ineligibility than at Prison B (13 versus 4 respectively).

Eighty of the potential participants screened did meet the eligibility criteria and were recruited into the study. Following completion of baseline data collection measures, 40 of these were randomly allocated to the intervention arm and 40 were allocated to the control arm. Table 8-1 provides an overview of the baseline characteristics of the participants comprising the study sample. All of the participants were male and the majority of participants described themselves as of White ethnic origin (76.3%). The age of participants ranged from 21 to 62 years of age, with the mean age of participants 34.26 years of age (*SD* = 8.3). Most of the participants reported being in some form of stable accommodation prior to imprisonment (91.3%), and just over half of participants stated that they were unemployed prior to coming into prison (60%). The majority of participants had been imprisoned before (86.3%), with the average total length of time spent in custody previously being 81.69 months (*SD* = 68.55). Just under half of the participants reported suffering from at least one long term physical or mental health condition (48.8%), with the most common occurring conditions being depression (28%), mental health (19%) and asthma (18%).

As can be seen from Table 8-1, the intervention and control study arms were very similar with regards to age, previous prison experience and previous total length of time spent in custody. There were fewer White participants in the control arm compared to the intervention arm, with the control arm also comprising of slightly more participants from Black and Asian ethnic groups. There were slight differences between the study arms with regards to housing status prior to imprisonment, with more control participants reporting being either a home-owner or living in rented accommodation before custody, while marginally more intervention than control participants reported living with family or friends, in temporary accommodation or being homeless prior to entering prison.

Concerning employment prior to imprisonment, more intervention participants than control arm participants reported being unemployed. There was a large difference between the two study arms regarding the prevalence of a long-term physical or mental health condition, with 62.5% of intervention arm participants reporting suffering from at least one long-term condition, in comparison to only 35% of participants from the control study arm.

Figure 8-1: CONSORT diagram of the screening, recruitment and randomisation of participants during the phase two feasibility study

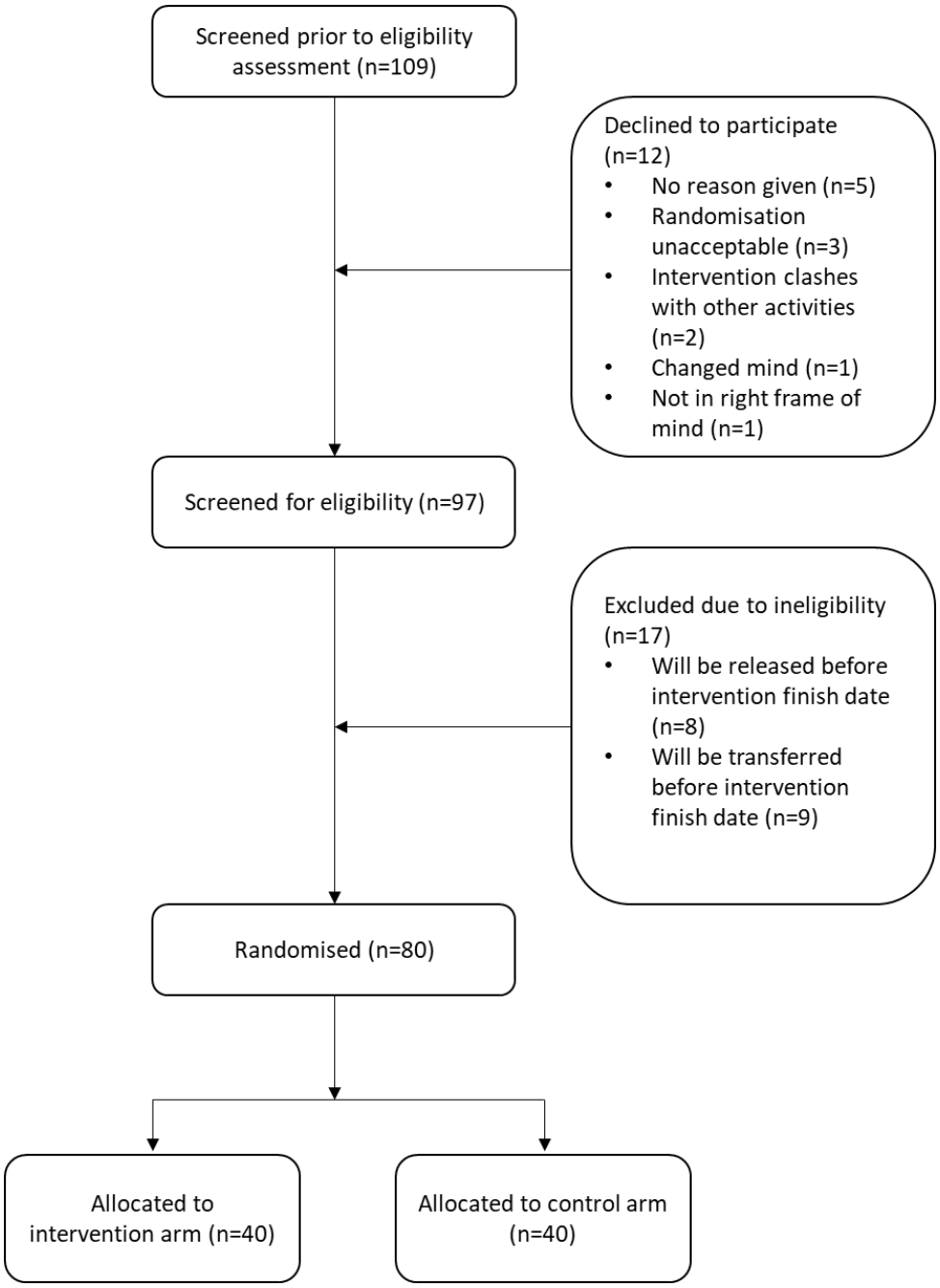


Table 8-1: Characteristics of the phase two feasibility study participants

		Intervention arm (n = 40)	Control arm (n = 40)	Total (n = 80)
Prison	Prison A	20 (50%)	20 (50%)	40 (50%)
	Prison B	20 (50%)	20 (50%)	40 (50%)
Age	Mean (*SD*)	34.28 (7.82)	34.25 (8.87)	34.26 (8.3)
Ethnicity	White	34 (85%)	27 (67.5%)	61 (76.3%)
	Mixed	5 (12.5%)	5 (12.5%)	10 (12.5%)
	Black	0 (0%)	5 (12.5%)	5 (6.3%)
	Asian	1 (2.5%)	3 (7.5%)	4 (5%)
Housing status prior to imprisonment	Renting house/flat	21 (52.5%)	26 (65%)	47 (58.8%)
	Owner of house/flat	4 (10%)	6 (15%)	10 (12.5%)
	Living with family/friends	9 (22.5%)	7 (17.5%)	16 (20%)
	Temporary accommodation	3 (7.5%)	1 (2.5%)	4 (5%)
	Homeless/no fixed abode	3 (7.5%)	0 (0%)	3 (3.8%)
Employment status prior to imprisonment	Employed	5 (12.5%)	6 (15%)	11 (13.8%)
	Self-employed	9 (22.5%)	12 (30%)	21 (26.3%)
	Unemployed	26 (65%)	22 (55%)	48 (60%)
Previous prison experience	Yes	34 (85%)	35 (87.5%)	69 (86.3%)
	No	6 (15%)	5 (12.5%)	11 (13.8%)
Previous time spent in prison in months (n = 68)	Mean (*SD*)	84 (69.81)	79.51 (68.28)	81.69 (68.55)
Suffers from physical or mental health condition	Yes	25 (62.5%)	14 (35%)	39 (48.8%)
	No	15 (37.5%)	26 (65%)	41 (51.3%)

8.3 Randomisation acceptability

Only a very small proportion of the 109 potential participants screened by the researcher refused to participate in the study as they deemed the process of randomisation to be unacceptable. Three of the participants screened (2.75%) advised the researcher that they would not be taking part in the study as they were not happy with the idea of being randomised to either receive the peer-led intervention or the usual care provided in the prisons; two potential participants from Prison A and one potential participant from Prison B.

Of the 80 participants that consented to participate and were randomised, nine of these explicitly expressed their disappointment at their random allocation when informed of this. Each of these nine participants had been randomised to the control arm. Of the nine participants that verbally expressed their discontent with their random allocation, seven were from Prison B and two were from Prison A.

Table 8-2 presents the proportion of participants that refused to continue with participation over the follow-up time points due to reported unhappiness at their random allocation. As can be seen from Table 8-2, more participants from Prison B than Prison A refused to continue with their participation in the study due to their random allocation. All of the five participants that refused to continue to participate in the study due to their random allocation had been randomised to the control arm. It must be acknowledged that reasons were not always given for deciding to discontinue participation, and thus randomisation unacceptability may have been more prevalent than the below data suggests.

Table 8-2: Number of participants withdrawing at each of the time-points due to randomisation unacceptability

	Follow-up 1	Follow-up 2	Follow-up 3
Prison A	0	1	1
Prison B	1	4	4
Overall	1	5	5

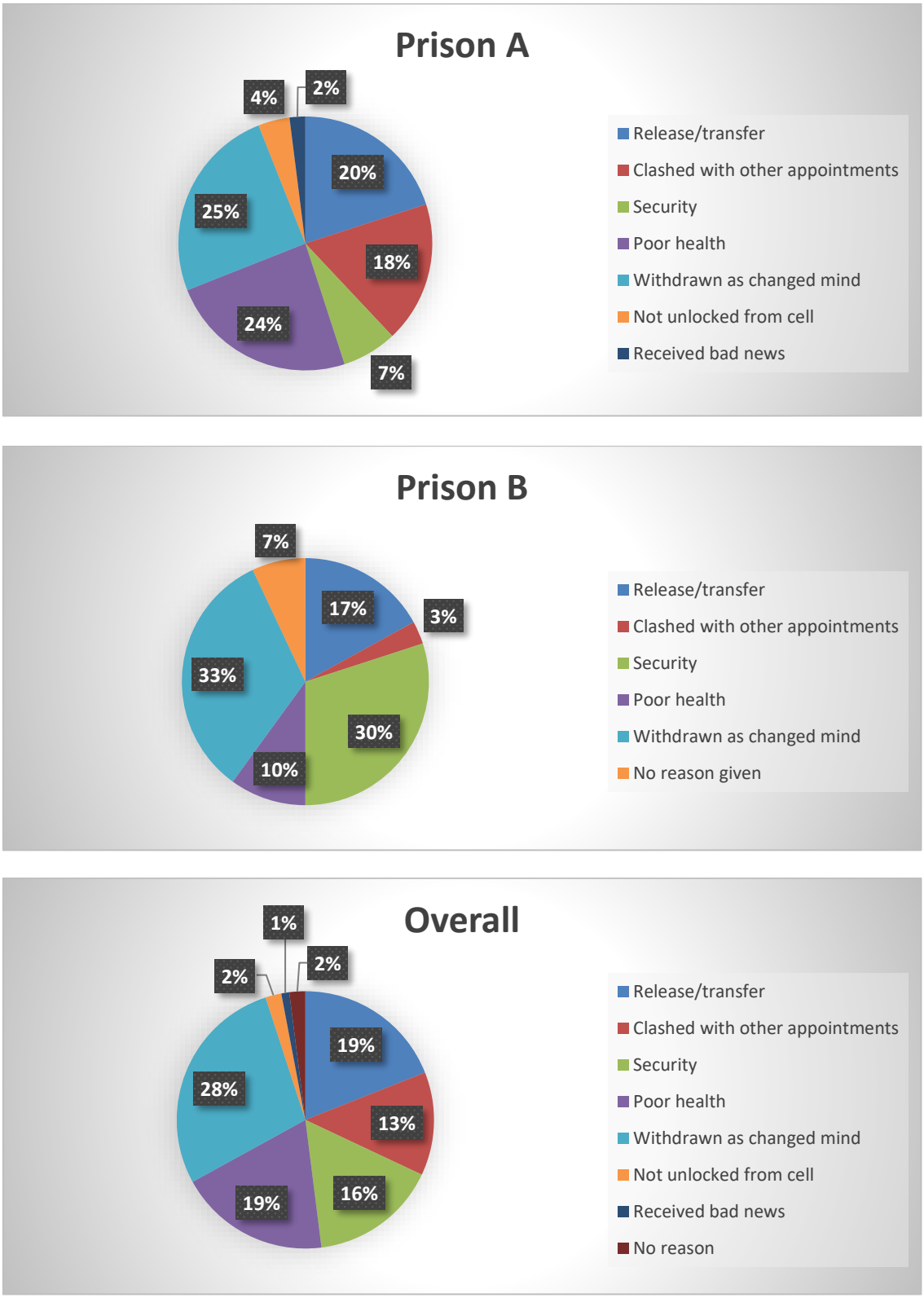
8.4 Intervention attendance

The maximum number of intervention sessions that intervention arm participants could attend was six at Prison A and five at Prison B. Six sessions had originally been scheduled to take place at both prisons, however, one at Prison B (the second week session) had to be cancelled due to unforeseen circumstances. Figures pertaining to attendance at the peer-led intervention sessions are presented in Table 8-3, with reasons for non-attendance summarised in Figure 8-2.

Table 8-3: Attendance to the peer-led intervention sessions by intervention arm participants at each of the prisons

	Prison A (6 intervention sessions available in total)	**Prison B (5 intervention sessions available in total)**	**Overall**
Number of participants	20	20	40
Number of sessions attended/sessions available (%)	65/120 (54%)	70/100 (70%)	135/220 (61%)
Median number of intervention sessions attended (*IQR*)	3.5 (1.25 – 5)	4.5 (2 – 5)	4 (2 – 5)
Range	0 – 6	0 – 5	0 – 6
Number of participants that attended all intervention sessions available (%)	2 (10%)	10 (50%)	12 (30%)
Number of participants that attended none of the intervention sessions (%)	1 (5%)	3 (15%)	4 (10%)

Figure 8-2: Reasons for non-attendance to the peer-led intervention sessions



The overall attendance to the intervention sessions was 61%, with attendance higher among the Prison B participants than the Prison A participants (70% versus 54% respectively). Participants from Prison B attended a median of 4.5 sessions (*IQR*: 2 – 5), while Prison A participants attended a median of 3.5 sessions (*IQR*: 1.25 – 5). Moreover, more participants from Prison B attended all of the peer-intervention sessions made available to them than did the participants from Prison A (50% versus 10%). In total, four of the intervention arm participants did not attend any of the intervention sessions (three from Prison B and one from Prison A); two of these stated that they had changed their mind about wanting to address their smoking, diet and physical activity behaviour prior to the intervention start date, one withdrew for security reasons, and the fourth was unexpectedly transferred just prior to the intervention commencing at the prison site.

As can be seen from Figure 8-2, overall, and at each of the prison sites, the main reason for missed intervention sessions was a change in mind about wanting to modify NCD risk-behaviour. The second most prevalent reasons were as a result of participants no longer being resident at the study prison as a result of prison transfer or release (19%) and participants suffering from poor health (19%). The third most frequent reason provided for missing sessions was due to participants being unable to attend for security reasons (16%).

8.5 Intervention fidelity

8.5.1 Inter-rater agreement

Intervention fidelity checklists for each of the 22 peer-led sessions that took place across both prisons were completed by the researcher and, to check reliability, a healthcare member of staff independent of the research team completed checklists for four sessions; two from each prison. The checklists completed by the researcher and the healthcare member of staff were analysed for inter-rater agreement. The Cohen's Kappa test indicated very good agreement between the judgement of the two raters (kappa = 1.00, $p < 0.001$).

8.5.2 Intervention delivery adherence – quantitative findings

The total percentage of intervention components delivered in each of the peer-led intervention sessions are summarised in Table 8-4, while a more detailed presentation of the delivery of each component for each of the peer-led sessions is presented in Tables 1 – 6 in Appendix 32.

Table 8-4: The percentage of intervention components delivered in each of the weekly peer-intervention sessions

Intervention week session	Prison A AM group	Prison A PM group	Prison B AM group	Prison B PM group
Week 1 – Introductory session	100%	100%	100%	100%
Week 2 – Changing your behaviour	50%	50%	NA	NA
Week 3 – Smoking cessation	88%	88%	75%	88%
Week 4 – Physical activity	63%	63%	63%	63%
Week 5 – Diet	63%	63%	63%	63%
Week 6 – Final session	50%	50%	50%	50%

The total percentage of intervention components delivered as planned in each session ranged from 50% to 100%, with only week one, the introductory session, having all planned components delivered in full as intended. As can be seen from the fidelity Tables 1-6 in Appendix 32, the majority of the intervention components across all sessions were delivered fully as planned (71%) or delivered partially (27%). The main reasons for partial delivery were that these intervention components required participants to reflect on their behaviour

change diaries, with adherence to completion of the diaries by participants something that appeared to be problematic, with very few participants bringing their completed diaries to the intervention sessions. Very few components were not delivered at all (2%); these components were obtaining commitment from the group regarding behaviour change and a summary of the session for the week three morning session at Prison A. While the latter was an accidental oversight by the peer-workers, the component regarding obtaining commitment was stated by the peer-workers at Prison A to have been purposefully excluded, as they felt uncomfortable asking the group to verbally state aloud in front of other group members a commitment to change their behaviour.

8.5.3 Intervention fidelity – qualitative findings

Through thematic analysis of the observational field notes of the peer-led intervention sessions recorded by the researcher, numerous themes were generated pertaining to the fidelity of the intervention delivery which were as follows;

- Confidence
- Rigidity
- Lack of adherence to completion of behaviour diaries
- Difficulties with SMART (Specific, Measurable, Attainable, Realistic and Time-specific) goals
- Negativity overcoming barriers
- Positive feedback and praise

Each of these fidelity themes generated are discussed in turn below.

8.5.3.1 Confidence

During the first week of delivery of the peer-intervention, the peer-workers across both prison sites appeared to be quite nervous when delivering the intervention to the group. In particular, there seemed to be a lack of confidence in delivering the more clinical and complex components of the first session. For example, during all four of the week one group sessions, the peer-workers asked for the researcher sat in on the group to clarify aspects about how the CO monitor worked, what the different CO readings meant, and the difference between nicotine replacement therapies and Varenicline. However, the peer-workers did

appear to become more confident in their delivery over time, with confidence seeming to increase as the peer-workers became more familiar and comfortable with the participants attending the group sessions. Peer-workers came across as most confident in their delivery of the smoking cessation session in week three, with all peer-workers sharing their stories of how they had stopped smoking in prison, along with the different coping strategies and distraction techniques they used to help them quit in prison. The sharing of these success stories by the peer-workers seemed to be valued by the participants, and helped to generate lots of group discussion when delivering the component regarding identifying triggers and ways of dealing with triggers to smoke in prison.

8.5.3.2 Rigidity

Across all sessions at both prisons, the peer-workers adhered to the intervention manual with very little deviation observed. The components for each week were delivered in the order and structure that they appeared in the manual, with the peer-workers also making use of the reminders and tips in the textboxes that were provided in case the peer-workers struggled with an aspect of intervention delivery. Such adherence to the manual appeared to keep the groups focussed and mitigated against the groups going off track. There was a slight deviation from the manual during week five, pertaining to healthy diet, as an aspect was introduced to the session that was not included in the intervention manual. One of the peer-workers from Prison A had developed a diet plan for those wanting to eat more healthily. This plan advised participants of the healthier choices to choose from on the prison menu, and also the different foods available from the canteen that could be put together to create a healthy meal. These diet plans appeared to be valued by the participants at Prison A, with participants from the groups taking copies of the plans away from the group and back to their cells. Given how successfully received these diet plans were by participants from Prison A, with the peer-workers' permission, the diet plans were made available for the peer-workers at Prison B to use within the intervention sessions. As with the participants at Prison A, the diet plans were well received and utilised by the participants when setting healthy diet SMART goals.

8.5.3.3 Lack of adherence to completion of behaviour diaries

Compliance with keeping the smoking, diet and physical activity diaries was very poor across both of the prisons. At Prison A, two participants brought their completed behaviour diaries along to the session during week two but not thereafter, and only one participant from Prison B completed the diaries and brought these along to each weekly group session. When queried by the peer-workers why participants had not brought the diaries to the sessions, the most cited reasons were that participants had either lost the diaries and thus were unable to complete them, or they had forgotten to complete them. Despite this, the peer-workers from both prisons continually encouraged participants to try and complete the behaviour diaries and to remember to bring these to the following session the week after, highlighting the importance of these in working through the planned tasks for the intervention sessions.

Although this was encouraged by the peer-workers, participants continued not to bring the completed behaviour diaries along to the group sessions. This lack of adherence did impact upon the delivery of a number of intervention components, as it meant that they could only be partially delivered. For example, during week four, participants were asked to set SMART goals regarding their physical activity by reflecting on their physical activity diary from the week before. As participants had not completed and brought their diaries to the session, they were unable to reflect on these, but were still able to set SMART goals around increasing their physical activity levels. The number of components across all sessions that were only partially delivered due to the lack of diary completion was 44 (27%).

8.5.3.4 Difficulties with SMART goals

At both prisons, a number of participants struggled with the setting of SMART goals. When participants were asked by the peer-workers to set SMART goals to improve their diet and increase their physical activity levels, and share these with the rest of the group, it was apparent that some of the participants had not utilised the SMART criteria and their set goals were too generic. The issues occurring most often with those that struggled were that participants were not setting goals that were measurable or within a specific time-frame. The peer-workers acknowledged this and individually helped those that had difficulty with

setting goals through the application of SMART criteria on a one-to-one basis after the group had finished.

8.5.3.5 Negativity overcoming barriers

During the week four and five group sessions, the peer-workers at both sites had difficulties in engaging participants with the task of overcoming barriers to being physically active and eating healthily in prison. During the group tasks, where participants were asked to identify the barriers and facilitators to being active and eating healthily in prison, and ways of overcoming the barriers identified, all four groups were very negative and focussed primarily just on the barriers that prison poses with regards to living a healthy lifestyle.

In terms of physical activity, the groups consistently stated they do not get enough access to the gymnasium and spend too much time behind their cell door to be able to engage in enough physical activity. When the peer-workers encouraged the participants to think of ways that participants could increase their activity levels without relying on access to the gymnasium, the groups were not very forthcoming with ideas, with the exception of a couple of participants who did acknowledge that physical activity could be, and is by some, undertaken in their cells when locked up. The peer-workers had to work hard to tease ideas out from the group regarding overcoming physical activity barriers and, given the lack of ideas put forward by the group, were required to use the examples that had been provided in the intervention manual.

The participants in the groups were even more negative about their ability to overcome the barriers to eating healthily in prison, stating that they had very little choice with regards to their diet and the lack of quality of the food provided. As with the physical activity session, the participants in the groups very much struggled to think of ways in which they could overcome the barriers to eating healthily in prison, meaning that most of the ideas of overcoming diet barriers were put forth by the peer-workers from the examples in the intervention manual, and using the diet plan sheets developed by the peer-worker at Prison A.

8.5.3.6 Positive feedback and praise

The CO monitoring conducted at the end of each group session to check the smoking levels of participants was a component of the intervention that was unexpectedly looked forward to by participants. Participants came across as eager to have their CO levels checked at the end of each session, stating that they wanted to see how much their levels had gone down since they had either cut down or fully stopped smoking. Participants also seemed to take a genuine interest in how other participants were doing, and what their CO reading was, with participants providing praise to each other when blowing a non-smoking reading (< 10ppm). This sharing of praise when obtaining positive feedback from the CO monitoring appeared to boost the morale of the groups, with participants often verbally stating that such was a motivator to sustaining behaviour change, as they did not want to let the rest of the group down the following week.

8.6 Intervention acceptability

At the follow-up one assessment, just after the six-week peer-intervention had been delivered, those participants that had attended at least one of the peer-led intervention group sessions were invited to complete the intervention acceptability questionnaire (n = 36). Just over 80% (n = 29) of these participants responded to the intervention acceptability questionnaire. The quantitative results of this questionnaire are discussed first, while the qualitative responses to the open-text questions are presented later in this section.

8.6.1 Quantitative analysis of acceptability questionnaires

Figure 8-3 displays the responses of the intervention arm participants to the quantitative intervention acceptability questions. Just over 70% of the intervention arm participants that completed the acceptability questionnaire stated that they had found the six-week peer-intervention very or extremely helpful overall. In terms of the individual sessions, participants appeared to find the session dedicated to smoking cessation the most helpful, with 69.1% of participants stating that they found this session very or extremely helpful, with no participants reporting to finding the session not at all helpful. Fewer participants found the sessions focussing on physical activity and diet as helpful, with 55.2%

and 44.8% respectively reporting these sessions to be very or extremely helpful; furthermore, a small proportion of participants reported these sessions to be not at all helpful (3.4% for each the physical activity and diet session). Similar responses were observed in response to how successful participants perceived the intervention to be in terms of actual behaviour change, with more participants reporting the intervention to be very or extremely helpful in terms of helping them to stop smoking (69.1%), than for improving physical activity levels (48%) and diet (31.1%). The reasoning behind why participants found the smoking cessation session more helpful and successful was highlighted in the open text responses to these questions which are discussed in the following qualitative analysis subsection.

In terms of learning from the intervention, the majority of participants agreed that they had learned new things about all three NCD risk-behaviours, and all 29 participants reported that the peer-workers were friendly and easy to talk to. Most participants (82.8%) reported the peer-workers to be very or extremely helpful, and 89.7% agreed that they found the peer-workers knowledgeable. The provision of stop-smoking medication by the healthcare department alongside delivery of the six-week intervention appeared to be valued by participants, with just under 70% of participants stating that they had found the stop-smoking medications prescribed to them to be very or extremely helpful. All 29 participants agreed that they would recommend the six-week peer-led intervention to other prisoners, and just over 85% stated that they would like the intervention to be repeated.

Alongside responding to these questions quantitatively, participants were asked to provide open text-responses to explain their answers to the quantitative questions discussed above; these responses were analysed thematically and are presented in the following sub-section.

Figure 8-3: Participant views towards intervention acceptability

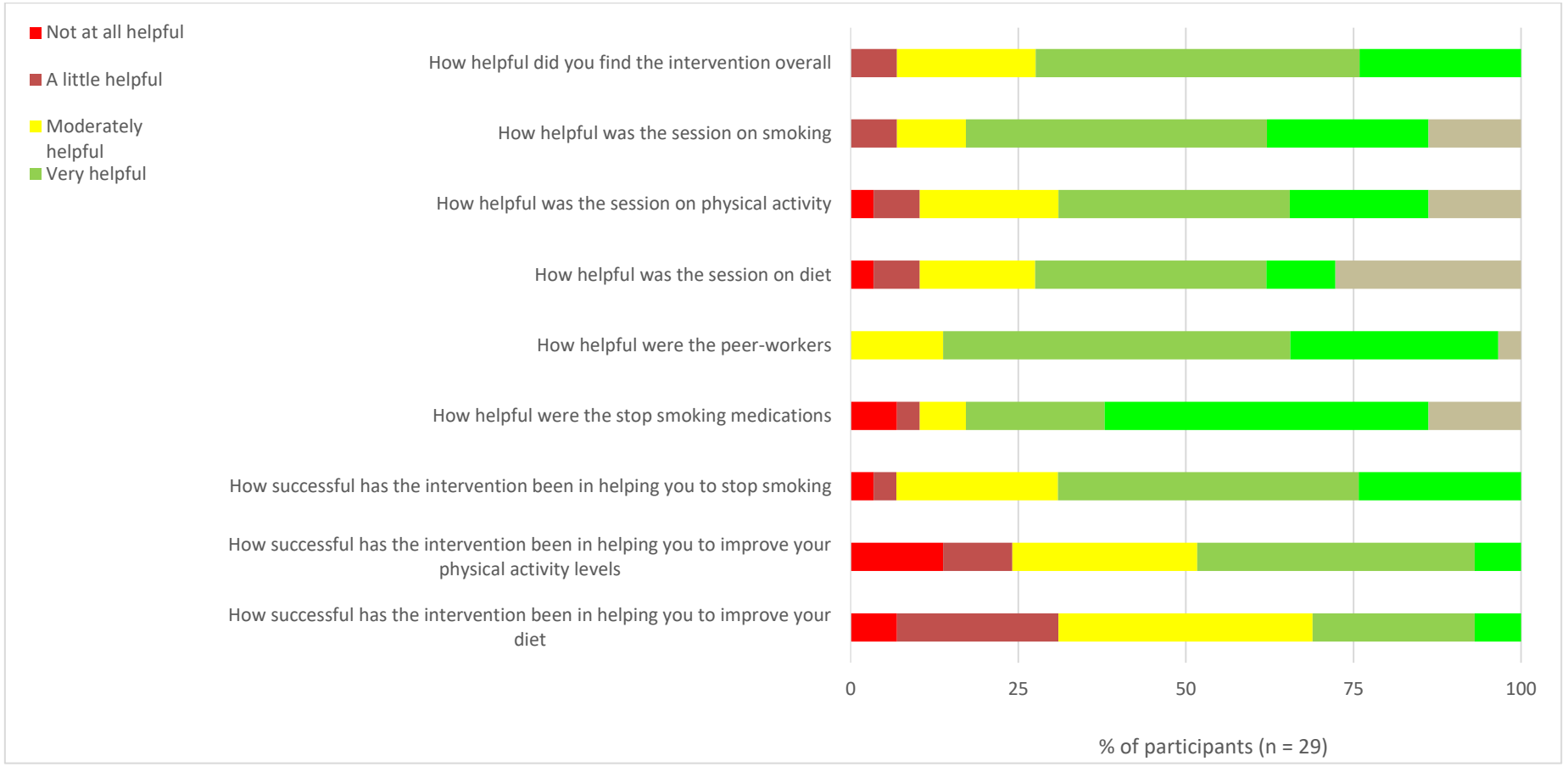
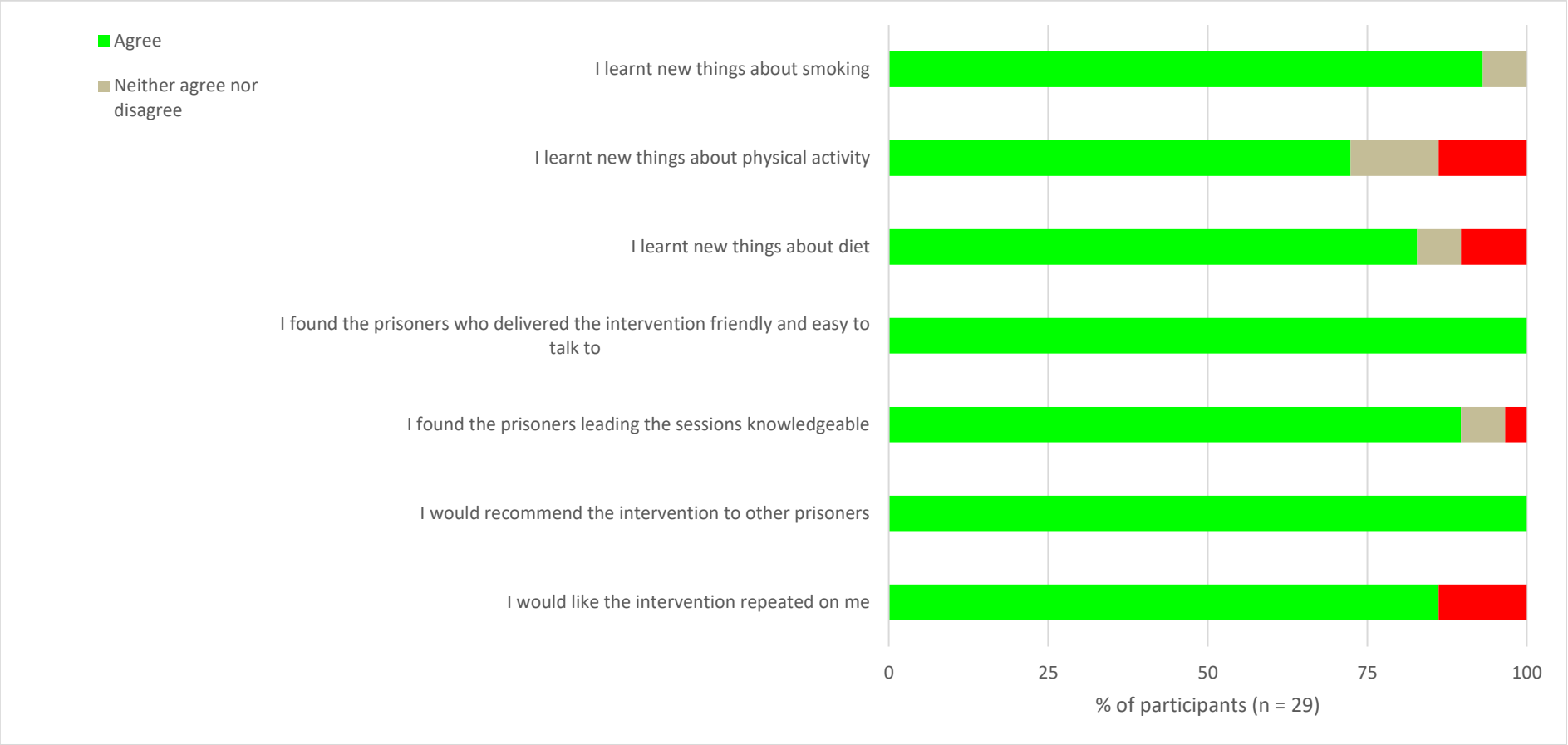


Figure 8-3 continued: Participant views towards intervention acceptability



8.6.2 Qualitative analysis of acceptability questionnaires

8.6.2.1 Perceptions on the helpfulness/success of the intervention

The major themes running through the open-text responses to the questions on the helpfulness and perceived success of the intervention were as follows;

- Helpfulness of the group sessions
- Beneficial peer-workers
- Provision of information/learning new things
- Intervention leading to behaviour change
- Negative impact of the prison regime/prison life
- Not in the right frame of mind to change

Each of these themes are discussed in turn below, with the illustration of quotes to support the themes.

8.6.2.1.1 Helpfulness of the group sessions

One of the main themes running throughout the open-text responses was that participants perceived the group sessions to be particularly useful and helpful. Participants made reference to the support and encouragement that they received from attending these weekly peer-led group sessions;

> *"The encouragement and health information covering things didn't already know was helpful. Have mostly been on basic so don't get to speak to others much so I did really enjoy coming to the group and talking things through with others" [Participant 9]*

> *"The course was good and I benefitted from it. The encouragement from the group has helped me throughout" [Participant 52]*

8.6.2.1.2 Beneficial peer-workers

The peer-workers delivering the peer-intervention at each of the prison sites were also reflected upon in a positive light by the participants, with participants reporting that the peer-workers leading the groups were supportive and on hand to provide advice and support where needed;

> *"The other two mentors were spot on and even spoke to us out of the group sessions to see how we were getting on and give us support" [Participant 60]*

"The lads leading the groups were really good. One of them met with me and helped me create a diet plan specific to my needs" [Participant 71]

The participants also made reference to the peer-workers being good role-models for them given that they were all ex-smokers who had previously stopped smoking in prison, with such also perceived to be beneficial in terms of the peer-workers sharing their own stories and experiences with participants;

"The group sessions were helpful. [Name of peer-worker] was a good influence as he's stopped in prison" [Participant 33]

8.6.2.1.3 Provision of information/learning new things

The health information provided by the peer-workers to participants in the group session was identified as being one of the other helpful aspects of the intervention, with many participants reporting to learning new things about smoking, diet and physical activity as a result of the intervention;

"The different sessions gave me lots of knowledge and things to think about. The physical activity session I enjoyed the most as I learnt new things about exercise and different exercises I can do in prison" [Participant 45]

Although numerous participants reported to learning new things around healthy lifestyles, there were a small number of participants who reported that they already had the necessary knowledge regarding physical activity and diet, and thus the intervention was covering knowledge they already possessed, rather than teaching them new aspects on the topics;

"Already knew the stuff on physical activity and diet as previously worked as a gym orderly" Participant 26]

Similarly, a small pocket of participants also reported that their physical activity levels and dietary habits were at a sufficient level prior to the intervention, and therefore their diet and physical activity levels had not changed much as a result of participating in the intervention;

"I have always been quite active and eaten healthily before so not much has changed there other than learning new things" [Participant 5]

These findings that some participants already possessed existing knowledge on diet and physical activity, and that some were already content with their levels of physical activity and dietary habits prior to the start of the intervention, could

explain the quantitative finding that fewer participants found the sessions focusing on diet and physical activity as helpful than the session focussed on smoking cessation. Similarly, if participants report to be content with their existing dietary and physical activity habits, then this could also explain why participants judged the intervention to be more successful in addressing their smoking cessation than in improving their diet and physical activity behaviour.

8.6.2.1.4 Intervention leading to behaviour change

A further theme running throughout the open-text responses was that participants appeared to view helpfulness and/or success of the intervention in terms of whether or not it had actually led to behaviour change for them individually. For example, one participant who did not manage to stop smoking commented;

> *"Can't put extremely helpful for stopping smoking as not fully stopped, just cut down. But I now know what to do next time I try to stop" [Participant 40]*

In contrast, those that had managed to change their behaviour commented that the intervention had helped them, or been a success for them, because it had led to their behaviour change, whether that be stopping smoking, increasing their physical activity levels or changing their dietary habits;

> *"I wouldn't have been able to stop smoking without the course. I also eat more healthily after being on the course" [Participant 56]*

However, it must be acknowledged that most participants, when discussing the intervention leading to behaviour change, did so in reference to stopping smoking, with only small numbers referencing that they perceived the intervention to be helpful, or a success, because it had led to changes in their diet or physical activity levels. In fact, numerous participants reported that they thought it was very difficult to change diet and physical activity levels in prison, due to the restrictions imposed by the prison regime.

8.6.2.1.5 Negative impact of the prison regime/prison life

Participants suggested that the prison regime/aspects of prison life hindered their ability to change their behaviour, particularly in terms of diet and physical activity. Numerous participants stated that they were unable to change their diet as this is dictated to them by the prison, with prisoners given a limited choice from a pre-

determined menu. Similarly, participants reported that aspects of the prison regime, such as limited access to the gymnasium and reduced privileges as a result of poor behaviour, prevented them from increasing their levels of physical activity while in custody;

> *"I can't improve my diet as get given the food" [Participant 62]*

> *"Physical activity - I have been given a good insight by this course however because of limitations within the prison I have not been able to implement" [Participant 77]*

Not only did the prison regime/aspects of prison life impact upon the perceived success of the intervention with regards to behaviour change, it was also suggested by participants to be a barrier to actually attending the intervention itself. Some participants reported that they were transferred from the prison where the intervention was taking place to another prison mid-way through delivery of the intervention, while another suggested they had been prevented by prison staff from further attending the intervention due to missing the previous session;

> *"On the whole found it very helpful but personal circumstances (getting in trouble) and transferring prisons messed things up" [Participant 2]*

> *"The session that I did get to go to was alright but didn't get to go to anymore of the sessions - wasn't out of choice. When I missed one session because of Court the officers wouldn't bring me anymore" [Participant 8]*

The potential to prevent recipients from being transferred to enable them to attend the intervention in full as intended is discussed in greater detail in the following Discussion Chapter.

8.6.2.1.6 Not in the right frame of mind to change

A final theme running throughout the open text responses was that some participants were not ready to change their behaviour, particularly with regards to stopping smoking. These participants talked about not being in the right frame of mind or in the right situation to make changes to their lifestyle. It was often mentioned that this was a result of personal circumstances or other things going on in their lives which hindered their ability and/or motivation to change their behaviour;

"Just not ready to stop smoking and diet and physical activity go hand in hand with this" [Participant 30]

"I have struggled stopping smoking due to personal reasons" [Participant 71]

Although some participants admitted that they had not been ready to change their behaviour, they did acknowledge that they had learned things from the intervention that they could use in the future when in the right frame of mind or in a situation perceived to be more amenable to behaviour change;

"Smoking - learnt about triggers and mechanisms which I will use in the future" [Participant 33]

"I hope to take what I've learnt and use to stop smoking and live more healthily when I'm released" [Participant 41]

In addition to explaining why they found the intervention helpful and successful, participants were also asked to identify what they thought were the most and least successful aspects of the intervention, along with any ideas they had to improve the intervention for the future.

8.6.2.2 Most and least successful aspects of the intervention

Participants identified the weekly group sessions as one of the most successful aspects of the intervention. They reported that the group sessions had provided them with a supportive and encouraging environment where they were around alike people wanting to change their behaviour;

"Sitting in a group with other people that are trying to quit smoking as well" [Participant 50]

"The group sessions. They gave me lots of encouragement and also added a bit of pressure" [Participant 52]

The peer-workers were also suggested by participants to be a successful aspect, with participants commenting that the peer-workers leading the groups were both supporting and caring;

"[Names of peer-workers] were also good and seemed to care how we were doing as a group" [Participant 9]

In addition to being supportive and caring, participants also identified that they preferred that the group sessions had been led by another prisoner, as it was suggested that peers possess the necessary understanding and trustworthiness required to deliver an intervention like this. Some participants went so far as to

say that they would not have been as honest and open if the intervention had been delivered by a member of staff as opposed to a peer;

> *"The lads chosen to do the groups. It really helped that they had both stopped smoking in prison and told us how they did it and how they dealt with the tough times. I will keep in touch with them" [Participant 17]*

> *"The prisoners running the sessions as you can open up more and be more truthful. Don't think people would be as honest with staff" [Participant 56]*

The stop-smoking medications prescribed to participants by the healthcare department, alongside the six-week intervention, was suggested to be another particularly successful aspect of the intervention, with participants reporting that such medications had significantly aided them in their stop-smoking attempt;

> *"Found group sessions interesting. Wouldn't have stopped smoking without the aid of meds" [Participant 13]*

The least successful aspects of the intervention were the period of delivery of the intervention and problems experienced with the prescribed stop-smoking medication. Participants reported that the group sessions did not go over a long enough period of time;

> *"It was all a bit rushed. Should go over a longer period of time with a longer period for the quit date" [Participant 62]*

Participants also reported often experiencing problems receiving the stop-smoking mediations on time.

> *"Not getting the treatments on a timely basis" [Participant 18]*

Although these two themes regarding short delivery and problems with medications were suggested to be problematic aspects of the intervention, it must be highlighted that just under half of participants (48%) stated that they could not think of any '*least successful'* aspects of the intervention. However, some positive suggestions for potential improvements to the intervention were posited.

8.6.2.3 Suggested improvements to the intervention

Just over 40% of participants responded that they could not think of any potential improvements, however, 17 participants did suggest elements for improvement. The two main suggestions were that the intervention should be delivered over a longer period of time to enable behaviour change among participants, and that a better process should be put in place to ensure the availability of stop-medications in a timely manner;

> *"More sessions each week and over longer time frame - maybe 8 or 10 weeks" [Participant 26]*
>
> *"Make sure prescriptions are on time" [Participant 52]*

A third suggested improvement was to mitigate against the potential negative impact of the regime on the intervention, in terms of both its impact on intervention attendance and supporting behaviour change. Some participants who had experienced problems with attending the intervention sessions as a result of being denied the opportunity to attend suggested that something should be done to remedy this to ensure it does not happen in the future;

> *"Actually letting me go to all of the sessions rather than being kept back" [Participant 40]*

While others suggested that changes be made to the prison environment and the regime to better enable prisoners to change their behaviour;

> *"For more things to be done to help change behaviour e.g. equipment to increase physical activity and improve diet, provision of a non-smoking wing" [Participant 60]*

8.7 Contamination to the control group

8.7.1 Contamination reported by the control participants

The responses to the contamination questions by the control group participants are presented in Figure 8-4. Of the 36 control participants that completed a contamination questionnaire on at least one occasion during follow-up, just over one-fifth (22%) reported to have being told information from the intervention group sessions. More control participants from Prison A than Prison B reported hearing information from the group sessions (33% versus 11% respectively). Only two control participants (6%) reported being shown health information

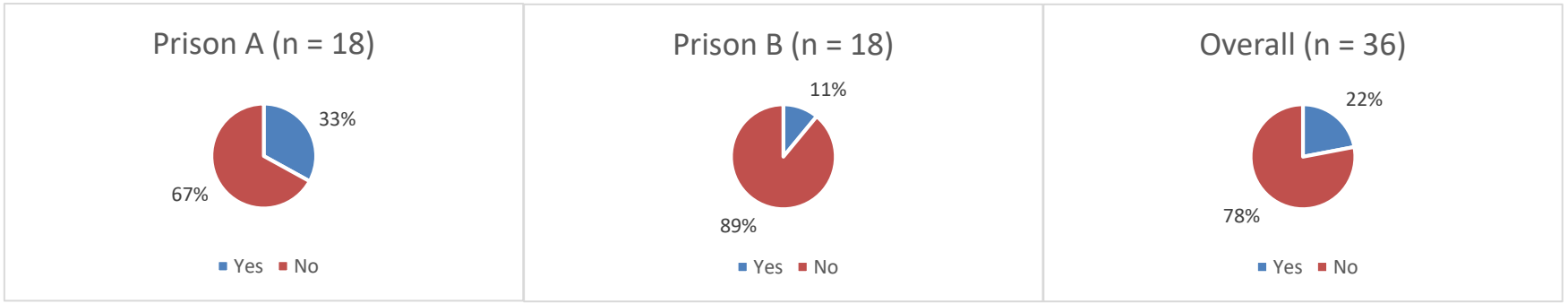
materials; both of these participants were from the Prison A site. Seventeen-percent of control participants reported to speaking to the peer-workers at their respective prison site about their own smoking, diet and physical activity behaviour, with this again more prevalent in Prison A. Just over 80% of control participants followed up reported that they had not heard of the specialised intervention terms ‘eat-well plate’, ‘cost-benefits analysis’ or ‘if-then plans’, with only three control participants from each site stating to have heard these terms.

8.7.2 Contamination reported by the intervention participants

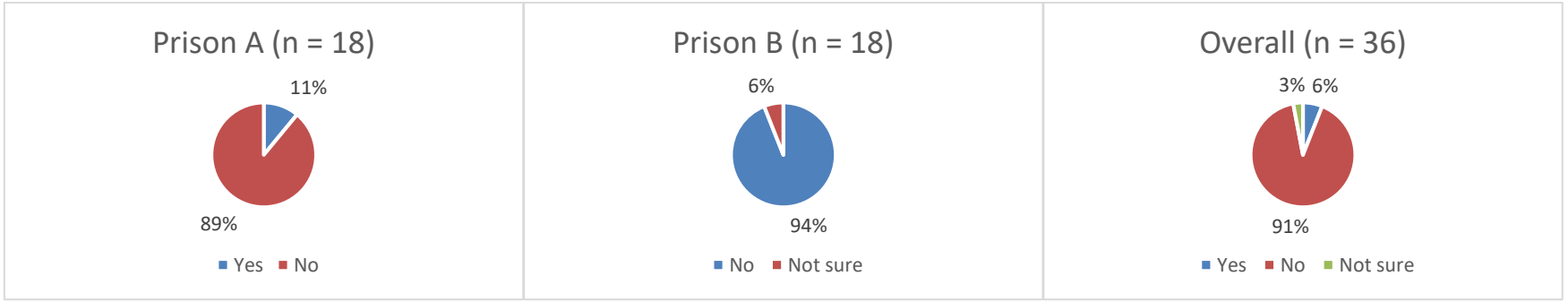
Figure 8-5 summarises the responses of the intervention arm participants to the intervention contamination questionnaire. As can be seen from Figure 8-5, 70% of intervention arm participants reported to speaking to non-intervention individuals outside of the group sessions about information discussed in the peer-led sessions. This occurred more frequently in Prison A than in Prison B (75% versus 65% respectively). The sharing of health information materials and worksheets from the intervention sessions was slightly less common, with approximately half of participants at each of the prisons reporting to sharing these materials with non-intervention prisoners. Intervention arm participants speaking with non-intervention prisoners about their attempts to address their smoking, diet and physical activity was highly prevalent, with just over three-quarters of the 33 intervention arm participants successfully followed-up on at least one occasion reporting to engage in this behaviour (81% in Prison A and 88% in Prison B).

Figure 8-4: Control participant responses to the contamination questions*

Told information from the group sessions



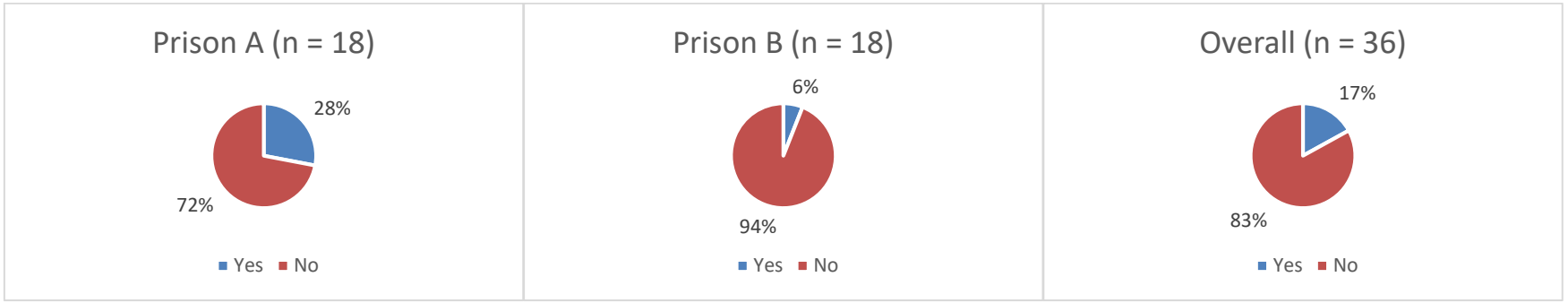
Shown health information leaflets from the group sessions



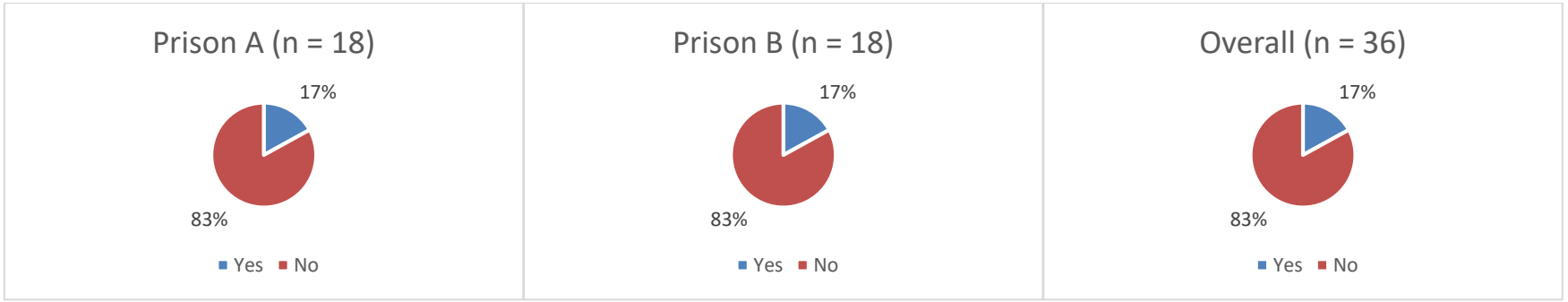
*Responses are based on the 36 control participants that completed the control contamination questionnaire on at least one of the three follow-up data collection points

Figure 8-4 continued: Control participant responses to the contamination questions*

Spoken to peer-workers about smoking diet or physical activity



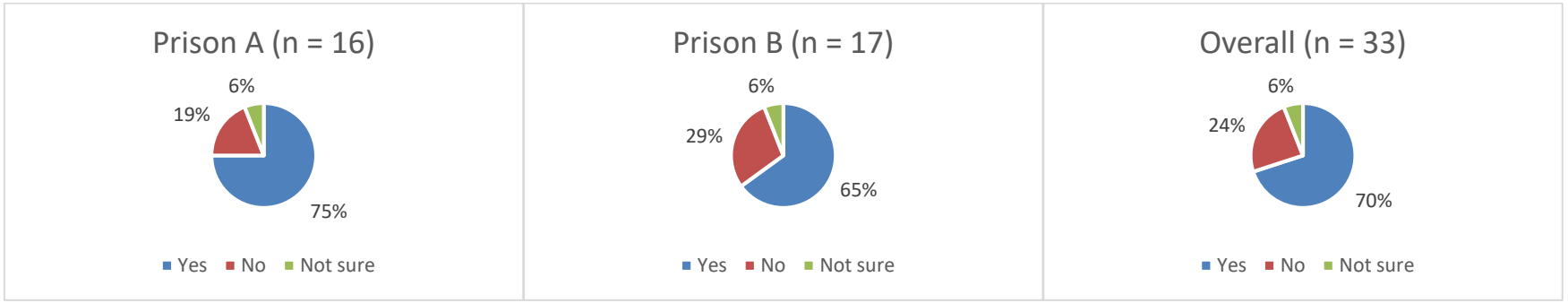
Heard any of the specialised intervention terms



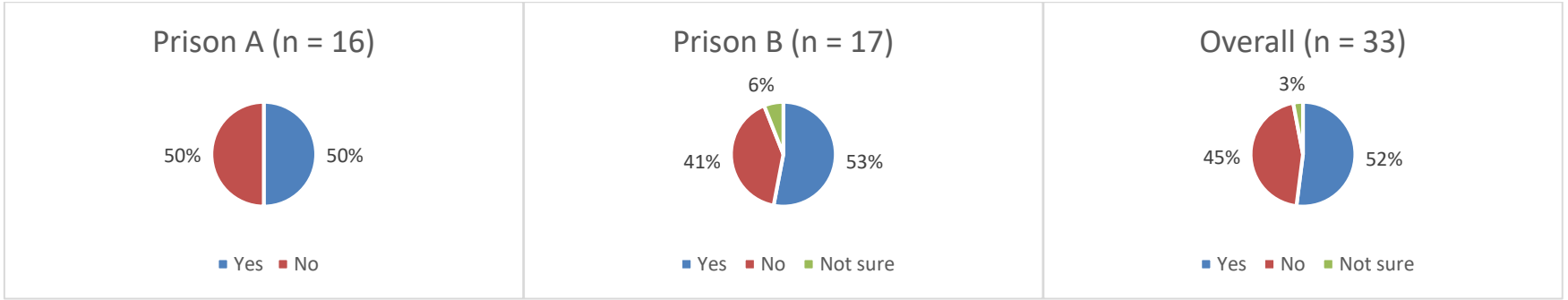
*Responses are based on the 36 control participants that completed the control contamination questionnaire on at least one of the three follow-up data collection points

Figure 8-5: Intervention participant responses to the contamination questions*

Spoken to non-intervention prisoners about peer-group discussions



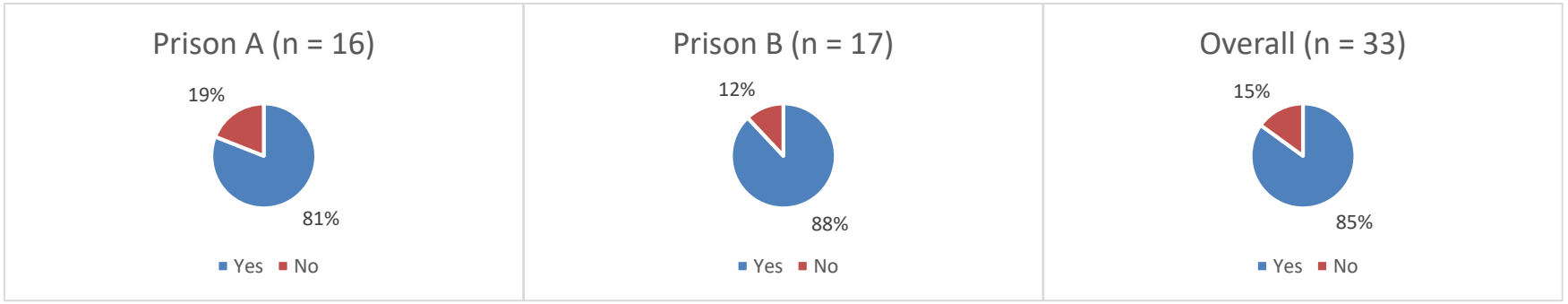
Shared health information leaflets/worksheets with non-intervention prisoners



*Responses are based on the 33 intervention arm participants that attended at least one of the peer-led intervention group sessions and successfully completed the contamination questionnaire on at least one occasion over the three-month follow-up period post-intervention

Figure 8-5 continued: Intervention participant responses to the contamination questions*

Spoken to non-intervention prisoners about attempt to modify behaviour



*Responses are based on the 33 intervention arm participants that attended at least one of the peer-led intervention group sessions and successfully completed the contamination questionnaire on at least one occasion over the three-month follow-up period post-intervention

8.8 Completion rate

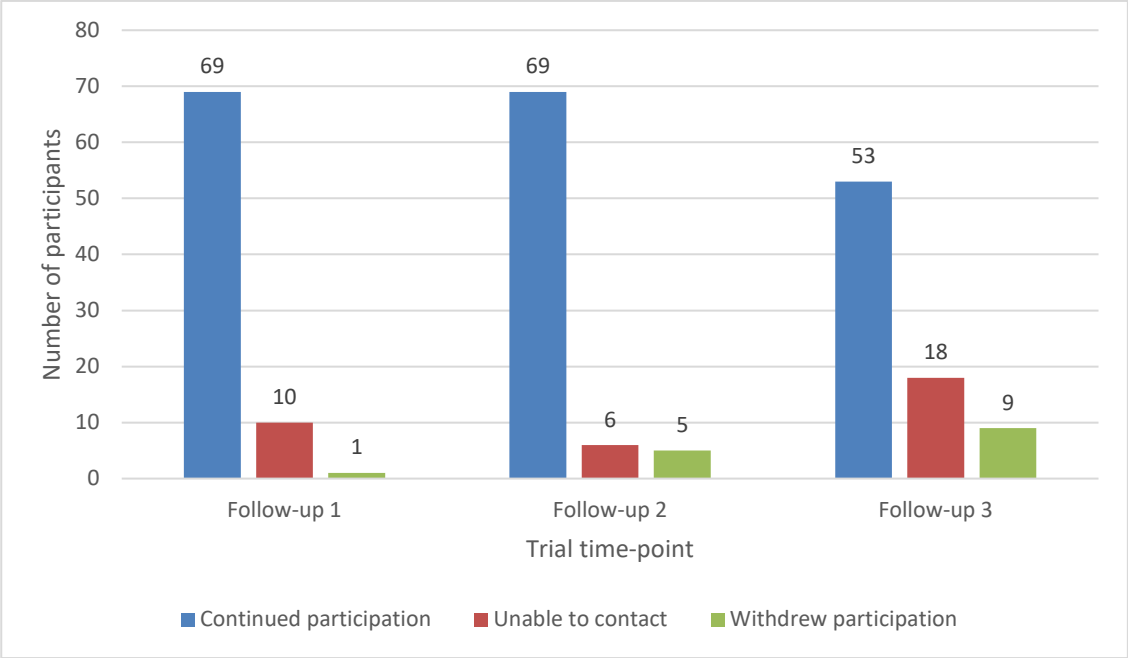
8.8.1 Retention

8.8.1.1 Retention figures

Figures pertaining to participant retention over the follow-up periods are presented in Figure 8-6. Over the first two follow-up periods, data collection was completed with 69/80 participants (86.25%), however, this reduced to 53/80 (66.25%) at the final follow-up time-point. It is important to note here that those not retained in the feasibility trial included those that made the decision to discontinue their participation after being successfully contacted by the researcher, and also those who could not be contacted for follow-up data collection. This distinction is noteworthy, as there were frequent occurrences where practical restrictions limited the researcher successfully contacting participants. Such practical restrictions included participants being transferred to another prison, the release of participants into the community, and prison security regulations limiting the researcher's contact with a participant (i.e. the researcher being denied access to a participant due to security concerns). Figure 8-6 provides further details regarding how non-retention was split between an inability of the researcher to successfully contact participants and those who were not followed up after making an active decision to discontinue their participation in the study.

As is evident from Figure 8-6, at each of the follow-up time-points, numerous participants were lost as a result of the researcher being unable to make successful contact with participants. This most often occurred when participants had been released from custody or had been transferred to another prison establishment where the feasibility trial was not being undertaken (follow-up one: 9, follow-up two: 6, follow-up three: 17). Nine participants in total made the decision to withdraw their participation after the researcher had successfully contacted them. The most often cited reason for withdrawal was that participants had not received the intervention and thus no longer wished to continue their participation in the trial (n = 5).

Figure 8-6: Participant retention/non retention in the study over the follow-up periods (n = 80 for all time-points)



8.8.1.2 Comparisons between retained versus non-retained

To assess whether or not there were any differences between those that were and were not retained in the trial, comparison of baseline measures was made between those that were successfully followed up versus those lost from the study at each of the follow-up time-points. In addition, comparisons in retention were also made according to study arm and whether or not participants were still being held in one of the two study prisons at that respective follow-up time-point. These comparisons in retention over the follow-up periods are presented in Table 8-5. Pearson-chi-squared tests and independent t-tests were undertaken to explore whether any potential differences in retention according to demographic, criminological and study variables were significant; the results of these tests are also displayed in Table 8-5.

Table 8-5: Differences in those retained versus non-retained at each of the study follow-up periods

	Baseline (n = 80)	Retained at follow-up 1			Retained at follow-up 2			Retained at follow-up 3		
		Yes (n = 69)	No (n = 11)	*P* Value	Yes (n = 69)	No (n = 11)	*P* Value	Yes (n = 53)	No (n = 27)	*P* Value
Prison										
Prison A	40	32 (80%)	8 (20%)	0.105	35 (88%)	5 (12%)	0.745	24 (60%)	16 (40%)	0.237
Prison B	40	37 (93%)	3 (7%)		34 (85%)	6 (15%)		29 (73%)	11 (27%)	
Arm										
Intervention	40	36 (90%)	4 (10%)	0.33	35 (88%)	5 (12%)	0.745	29 (73%)	11 (27%)	0.237
Control	40	33 (83%)	7 (17%)		34 (85%)	6 (15%)		24 (60%)	16 (40%)	
Age – Mean (*SD*)	34.26 (8.3)	34 (8.15)	35.91 (9.49)	0.482	34.23 (8.73)	34.45 (5.18)	0.935	33.47 (8.79)	35.81 (7.17)	0.235
Ethnicity										
White	61	54 (89%)	7 (11%)	0.281	54 (89%)	7 (11%)	0.281	40 (66%)	21 (34%)	0.819
Non-White	19	15 (79%)	4 (21%)		15 (79%)	4 (21%)		13 (68%)	6 (32%)	
Housing										
Stable accommodation	73	62 (85%)	11 (15%)	0.585	63 (86%)	10 (14%)	1.000	48 (66%)	25 (34%)	1.000
Non-stable accommodation	7	7 (100%)	0 (0%)		6 (86%)	1 (14%)		5 (71%)	2 (29%)	
Employment										
Employed	32	27 (84%)	5 (16%)	0.747	26 (81%)	6 (19%)	0.333	21 (66%)	11 (34%)	0.923
Unemployed	48	42 (88%)	6 (12%)		43 (90%)	5 (10%)		32 (67%)	16 (33%)	
Previous imprisonment										
Yes	69	59 (86%)	10 (14%)	1.000	60 (87%)	9 (13%)	0.643	45 (65%)	24 (35%)	0.742
No	11	10 (91%)	1 (9%)		9 (82%)	2 (18%)		8 (73%)	3 (27%)	
Mean (*SD*) number of months spent in prison	81.69 (68.55)	83.41 (72.38)	71.7 (40.8)	0.621	79 (68.68)	99.11 (68.98)	0.417	72.45 (58.88)	98.63 (82.12)	0.134
Suffers from physical or mental health condition										
Yes	39	34 (87%)	5 (13%)	0.814	34 (87%)	5 (13%)	0.814	26 (67%)	13 (33%)	0.939
No	41	35 (85%)	6 (15%)		35 (85%)	6 (15%)		27 (66%)	14 (34%)	
Released/transferred at respective follow-up										
Yes	NA	0 (0%)	9 (100%)	<0.001	9 (50%)	9 (50%)	<0.001	13 (35%)	24 (65%)	<0.001
No	NA	69 (97%)	2 (3%)		60 (97%)	2 (3%)		40 (93%)	3 (7%)	

The one factor that was significantly associated with retention across all time-points was whether or not the participants were still resident in one of the research study prisons at the respective follow-up time-point. Participants that had been released or transferred to another non-study prison were much less likely to be retained than participants that were still resident in one of the two prisons that the research was taking place in; Pearson chi-square tests revealed this difference to be highly significant across all three of the follow-up periods (all $p < 0.001$). Study arm was not associated with retention at any of the follow-up periods (all $p > 0.05$). Moreover, there were no significant differences in retention according to the following variables; study prison at baseline, age, ethnicity, housing status prior to imprisonment, employment status prior to imprisonment, whether or not participants had been previously imprisoned, length of time spent in prison previously or whether or not participants reported to suffering from at least one long term physical or mental health condition (all $p > 0.05$).

8.8.2 Completion of individual data collection measures

Table 8-6 presents details of the completion of the individual data collection measures intended to be completed by participants retained in the trial at each of the time-points. Details are given as n/N, where n is the number of participants that completed the measures, and N is those that were engaged with the trial at that time-point and willing to complete data collection measures.

Completion of the main survey, the WEBWMS survey and the contamination survey by those participants retained in the trial was high at each of the time-points these measures were intended to be collected, ranging from 94.2% to 100%. Successful recordings of CO were very high over the first two time-points (100% respectively), however gradually reduced over the remaining two follow-up periods (follow-up two: 87%, follow-up three: 71.7%). Successful baseline recordings of height and weight (92.5% and 91.3% respectively) were not as high as for CO and, as with CO, the number of participants where a successful weight and BMI reading were recorded gradually reduced over the follow-up periods. The following Discussion Chapter explains the reasoning behind the difficulties in obtaining the more objective data measures over the study follow-up periods.

Table 8-6: Completion rates for each of the individual data collection measures intended to be completed by participants

	Time-point			
Data collection measure	**Baseline**	**Follow-up 1**	**Follow-up 2**	**Follow-up 3**
Main questionnaire assessing smoking, diet and physical activity – prevalence, knowledge and attitudes	80/80 (100%)	69/69 (100%)	69/69 (100%)	53/53 (100%)
WEBWMS questionnaire	80/80 (100%)	69/69 (100%)	68/69 (98.6%)	53/53 (100%)
CO reading	80/80 (100%)	69/69 (100%)	60/69 (87%)	38/53 (71.7%)
Height reading*	74/80 (92.5%)	NA	NA	NA
Weight reading	73/80 (91.3%)	67/69 (97.1%)	60/69 (87%)	38/53 (71.7%)
BMI calculation	73/80 (91.3%)	61/69 (88.4%)	56/69 (81.2%)	34/53 (64.2%)
Contamination questionnaire**	NA	68/69 (98.6%)	65/69 (94.2%)	52/53 (98.1%)
Intervention acceptability questionnaire***	NA	29/29 (100%)****	NA	NA

*Height measurements were only recorded once at the baseline data collection time-point
**Contamination questionnaires were only completed at the follow-up time-points and not at baseline
***Intervention acceptability questionnaire was only completed once by intervention arm participants successfully contacted at follow-up one
****This calculation was based on the eligible intervention arm participants followed-up; 33 were followed-up but 4 were not invited to complete the questionnaire as they had not attended any of the peer-led intervention sessions

8.9 Smoking prevalence

8.9.1 Agreement between self-reported and CO verified smoking prevalence

Agreement between self-reported and CO verified smoking over the trial period is presented in Table 8-7.

Table 8-7: Agreement between self-reported smoking prevalence and prevalence as recorded by CO present in breath

Baseline (n = 80)**				
		Self-reported smoker Yes	No	Kappa (*p*-value)
CO verified smoker	Yes	57	0	NA
	No	23	0	
Follow-up 1 (n = 69)				
		Self-reported smoker Yes	No	Kappa (*p*-value)
CO verified smoker	Yes	39	0	0.66 ($p < 0.001$)
	No	11	19	
Follow-up 2 (n = 60)				
		Self-reported smoker Yes	No	Kappa (*p*-value)
CO verified smoker	Yes	34	2	0.35 ($p = 0.002$)
	No	15	9	
Follow-up 3 (n = 38)				
		Self-reported smoker Yes	No	Kappa (*p*-value)
CO verified smoker	Yes	26	0	0.58 ($p < 0.001$)
	No	6	6	

*Calculations are presented for only those participants for whom both a self-reported smoking prevalence and a CO measurement were taken
**Cohen's Kappa was unable to be calculated for the baseline time-point as the assumption regarding an equal number of categories was not met

There was fair to good agreement between the two smoking prevalence measures over the three follow-up periods (follow-up one: good, follow-up two: fair, follow-up three: moderate), with follow-up two being the only time at which agreement was below moderate. There were very few instances over the trial where participants self-reported not to be smoking yet their CO reached ≥ 10ppm, thus indicating they were in fact smoking (n = 2). Disagreement most often took the form of participants self-reporting to be smoking despite their CO levels not reaching or exceeding the 10ppm reading to classify them as smokers

(n = 32). Regarding this latter finding, the short half-life of CO in the body and the limited specificity for CO monitors to detect light smoking has been well documented in the literature (Benowitz, 2002; Marrone et al., 2010), and could explain the relative frequent occurrence of participants reporting to be engaged in smoking behaviour despite their CO readings suggesting otherwise. In light of this potential limited specificity suggested by the above findings, and given that over the follow-up periods there were problems in obtaining CO readings for participants (discussed earlier in section 8.8.2), the smoking prevalence results presented in the following sections are based upon the self-reported smoking behaviour of participants as opposed to CO verified smoking behaviour.

8.9.2 Descriptive results

Participants' self-reported smoking status over the trial is presented in Table 8-8. All 80 participants were smokers at baseline, of which 79 reported smoking daily. The median number of cigarettes smoked daily at baseline among the intervention arm was 13 (*IQR*: 10 – 17), while control participants reported to smoke a median of 11 cigarettes per day (*IQR*: 10 – 20). The percentage of smokers reduced in both study arms by follow-up one, however, this was more pronounced in the intervention arm where 50% of those followed-up reported to be non-smoking, in comparison to only 2.8% in the control arm. Of the 50 participants that were still smoking at follow-up one, 49 reported to be smoking cigarettes on a daily basis. The median number of cigarettes smoked per day reduced from baseline in both study arms, with the median number of cigarettes smoked by participants in each arm being 10. At follow-up two, the percentage of smokers in the intervention arm increased slightly from the previous follow-up time point, however, the number of non-smokers in the intervention arm was still higher than in the control arm at 28.6% and 8.6% respectively. Fifty-four of the 56 smokers across both study arms at follow-up two were smoking hand-rolled cigarettes on a daily basis. The median number of cigarettes smoked per day by each arm again reduced from the previous follow-up time point, with intervention participants smoking a median of 7 cigarettes per day (*IQR*: 3 – 10) and control participants smoking a median of 8 cigarettes per day (*IQR*: 4 – 10). In contrast to the previous follow-up time-points, there was very little difference between the percentage of smokers and non-smokers in each study arm at the final follow-up

time-point, with 20.7% of intervention arm and 25% of control arm participants successfully followed-up stating to be non-smokers at this final time point. All but one of the 41 smokers at follow-up three reported to smoking hand-rolled cigarettes on a daily basis. The median number of cigarettes smoked per day by intervention and control participants were 8.5 (*IQR*: 3.75 – 13.5) and 10 (*IQR*: 4.5 – 10) respectively.

Table 8-8: Self-reported smoking behaviour at each trial time-point according to study arm

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 34)	Intervention (n = 29)	Control (n = 24)
Smoking status								
Smoker	40 (100%)	40 (100%)	18 (50%)	32 (97%)	25 (71.4%)	31 (91.2%)	23 (79.3%)	18 (75%)
Non-smoker	0 (0%)	0 (0%)	18 (50%)	1 (2.8%)	10 (28.6%)	3 (8.6%)	6 (20.7%)	6 (25%)
Number of participants reporting to smoke daily	39 (97.5%)	40 (100%)	17 (47.2%)	32 (97%)	24 (68.6%)	30 (88.2%)	22 (75.9%)	18 (75%)
Number of cigarettes smoked by those reporting to smoke daily*								
Median (*IQR*)	13 (10-17)	11 (10-20)	10 (3.5-15)	10 (5.25-15)	7 (3-10)	8 (4-10)	8.5 (3.75-13.5)	10 (4.5-10)
Range	3-40	4-30	2-25	2-30	1-25	1-25	2-25	2-18

* Calculations based upon those reporting to smoke cigarettes on a daily basis only

8.9.3 Multi-level model results

The null random effects model containing the random effect of individual and the intercept only explained significantly greater variation than the intercept-only single-level model (p = 0.0002), indicating that the addition of the random effect was necessary and that it was appropriate to proceed with building a multi-level model for the smoking prevalence data. The results for smoking behaviour of the final multi-level model are presented in Table 8-9.

Table 8-9: Prevalence of smoking behaviour multi-level model results

	OR	*P* value	95% Confidence interval (*CI*)	
Time (weeks)	0.77	0.002	0.65	0.91
Intervention arm (reference: control)	0.02	0.004	.002	0.29
Age (years)	1.01	0.879	0.93	1.08
Prison B (reference: Prison A)	1.40	0.547	0.47	4.21
In stable accommodation prior to prison (reference: in unstable accommodation)	0.32	0.266	0.04	2.41
In form of employment prior to prison (reference: unemployed)	0.90	0.855	0.28	2.86
Been in prison before (reference: first time in prison)	2.14	0.321	0.48	9.60
Suffers from at least one long-term condition (reference: does not suffer from long-term condition)	0.26	0.042	0.07	0.95

Time was significantly associated with smoking (p = 0.002), with each one week increase in time reducing the odds of smoking by 23%. Study arm was also significantly associated with smoking (p = 0.004), with intervention arm

participants at reduced odds of smoking in comparison to control participants (*OR*: 0.02, 95% *CI*: 0.002 to 0.29). The health status of participants was also significantly associated with smoking ($p = 0.042$), with participants reporting to suffer from at least one long term physical or mental health condition at reduced odds of smoking in comparison to those participants reporting to suffer from no such conditions (*OR*: 0.26, 95% *CI*: 0.07 to 0.95). Participants that were living in stable accommodation and those in some form of employment prior to imprisonment were at reduced odds of smoking than their counterparts, however neither of these results reached statistical significance (both $p > 0.05$). Participants from Prison B and those with previous experience of imprisonment were at increased odds of smoking than those from Prison A and in prison for the first time respectively, however neither of these differences were statistically significant ($p > 0.05$). These results should be interpreted with caution though, as given that this study was a feasibility study, the study was not powered to detect significant differences between groups and thus the CIs for most variables are quite wide. A larger scale definitive trial sufficiently powered to detect differences between groups would have more precision to explore the impact of these variables on the smoking behaviour of participants.

8.10 Smoking knowledge

The knowledge of participants pertaining to the harmful effects of smoking are presented in Table 8-10. Knowledge on the harmful effects of smoking first hand was overall very good, with participants in both study arms answering a median of four out of the four questions correctly at baseline and at all follow-up time-points. Knowledge on the potential harmful effects of second hand smoking on adults was also very good, with participants in each study arm answering a median of six out of the six questions on this area correctly at baseline; the same trend was observed over the remaining follow-up periods throughout the trial.

Table 8-10: Overall smoking knowledge scores at each of the time-points

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 34)	Intervention (n = 29)	Control (n = 24)
Knowledge score – effects of 1st hand smoking								
Median (*IQR*)	4 (3 – 4)	4 (3 – 4)	4 (4 – 4)	4 (4 – 4)	4 (4 – 4)	4 (4 – 4)	4 (4 – 4)	4 (4 – 4)
Range	0 – 4	2 – 4	1 – 4	2 – 4	1 – 4	3 – 4	2 – 4	3 – 4
Knowledge score – effects of 2nd hand smoking on adults								
Median (*IQR*)	6 (4 – 6)	6 (5 – 6)	6 (5.25 – 6)	6 (5.5 – 6)	6 (6 – 6)	6 (5.75 – 6)	6 (6 – 6)	6 (6 – 6)
Range	0 – 6	0 – 6	2 – 6	0 – 6	0 – 6	0 – 6	0 – 6	0 – 6
Knowledge score – effects of 2nd hand smoking on children								
Median (*IQR*)	5 (4 – 6)	5 (4 – 6)	6 (5 – 7)	5 (5 – 6)	7 (6 – 7)	5 (5 – 7)	6 (5 – 7)	5.5 (5 – 6.75)
Range	0 – 7	0 – 7	5 – 7	0 – 7	1 – 7	0 – 7	1 – 7	3 – 7

Knowledge on the potential harmful effects of second hand smoking on children was good, however, the overall knowledge score was lower than that of the overall knowledge scores for the effects of first hand smoking and the effects of second hand smoking on adults. At the baseline data collection point, participants in each of the two study arms answered a median of five out of the seven questions correctly. The knowledge of participants in the intervention arm appeared to improve post-intervention, as they answered a median of six out of seven questions correctly at follow-up one, and a median of seven out of seven questions correctly at follow-up two. However, this decreased to a median of six again by the final follow-up time point. In contrast, control participants' knowledge did not appear to change much throughout the study period, as the median number of questions answered correctly by control participants remained at five out of seven, except at the final time-point when this did increase to six questions answered correctly. Across all data collection time-points, the two questions that intervention and control participants most often answered incorrectly were those regarding children exposed to second hand smoke being at risk of suffering from ear infection and sudden infant death syndrome.

8.11 Smoking attitudes

The attitudes of participants towards smoke-free rules are presented in Table 8-11. All, or almost all, of intervention and control participants agreed or strongly agreed with smoke-free rules on public transport and in schools; this was true for all four of the data collection points throughout the trial. Large proportions in each arm also agreed with smoke-free rules in the workplace over the trial period, however, to a slightly lesser extent than the proportion that agreed with smoke-free rules on public transport and in schools. There was quite a mixed response to the statement pertaining to smoke-free rules in prisons, with approximately half of intervention participants reporting to agree with such smoke-free rules at baseline and the first two follow-ups, rising slightly to just under 60% agreeing with such smoke-free rules by the final follow-up time-point. In contrast, approximately one-third of control participants reported to agreeing with smoke-free rules in prisons at baseline and at the first two follow-ups, dropping to one-fifth agreeing with such rules by the final follow-up time-point. Attitudes towards

smoke-free rules within the home were similarly mixed, varying over the trial period and according to study arm. Overall though, more participants in each arm agreed with smoke-free rules in the home than those that disagreed with such rules.

Table 8-11: Attitudes towards smoke-free rules at each of the time-points

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention	Control	Intervention	Control	Intervention	Control	Intervention	Control
Prison	(n = 40)	(n = 40)	(n = 36)	(n = 33)	(n = 35)	(n = 34)	(n = 29)	(n = 24)
Strongly disagree	7 (17.5%)	10 (25%)	5 (13.9%)	8 (24.2%)	4 (11.4%)	7 (20.6%)	2 (6.9%)	6 (25%)
Disagree	9 (22.5%)	7 (17.5%)	11 (30.5%)	8 (24.2%)	8 (22.9%)	14 (41.2%)	8 (27.6%)	11 (45.9%)
Neither agree nor disagree	3 (7.5%)	10 (25%)	0 (0%)	8 (24.2%)	5 (14.3%)	2 (5.9%)	2 (6.9%)	2 (8.3%)
Agree	11 (27.5%)	6 (15%)	10 (27.8%)	4 (12.2%)	6 (17.1%)	5 (14.7%)	7 (24.1%)	2 (8.3%)
Strongly agree	10 (25%)	7 (17.5%)	10 (27.8%)	5 (15.2%)	12 (34.3%)	6 (17.6%)	10 (34.5%)	3 (12.5%)
Public transport								
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2.9%)	0 (0%)	0 (0%)
Neither agree nor disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	10 (25%)	10 (25%)	5 (13.9%)	6 (18.2%)	6 (17.1%)	6 (17.6%)	8 (27.6%)	3 (12.5%)
Strongly agree	29 (72.5%)	30 (75%)	31 (86.1%)	27 (81.8%)	29 (82.9%)	27 (79.4%)	21 (72.4%)	21 (87.5%)

Table 8-11 continued: Attitudes towards smoke-free rules at each of the time-points

Home								
Strongly disagree	5 (12.5%)	4 (10%)	1 (2.8%)	8 (24.2%)	2 (5.7%)	3 (8.8%)	2 (6.9%)	3 (12.5%)
Disagree	7 (17.5%)	4 (10%)	3 (8.3%)	4 (12.2%)	1 (2.9%)	3 (8.8%)	5 (17.2%)	3 (12.5%)
Neither agree nor disagree	2 (5%)	2 (5%)	4 (11.1%)	1 (3%)	4 (11.4%)	1 (2.9%)	3 (10.4%)	2 (8.3%)
Agree	13 (32.5%)	15 (37.5%)	12 (33.4%)	7 (21.2%)	12 (34.3%)	17 (50%)	9 (31%)	7 (29.2%)
Strongly agree	13 (32.5%)	15 (37.5%)	16 (44.4%)	13 (39.4%)	16 (45.7%)	10 (29.5%)	10 (34.5%)	9 (37.5%)
Work								
Strongly disagree	2 (5%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)	1 (3.4%)	0 (0%)
Disagree	4 (10%)	2 (5%)	1 (2.8%)	2 (6.1%)	0 (0%)	4 (11.8%)	1 (3.4%)	2 (8.3%)
Neither agree nor disagree	0 (0%)	2 (5%)	3 (8.3%)	2 (6.1%)	2 (5.7%)	2 (5.9%)	2 (6.9%)	0 (0%)
Agree	13 (32.5%)	18 (45%)	9 (25%)	9 (27.3%)	11 (31.4%)	13 (38.2%)	6 (20.7%)	7 (29.2%)
Strongly agree	21 (52.5%)	18 (45%)	23 (63.9%)	19 (57.5%)	22 (62.9%)	15 (44.1%)	19 (65.6%)	15 (62.5%)

Table 8-11 continued: Attitudes towards smoke-free rules at each of the time-points

Schools								
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	3 (7.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neither agree nor disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3.4%)	0 (0%)
Agree	6 (15%)	3 (7.5%)	2 (5.6%)	1 (3%)	3 (8.6%)	3 (8.8%)	3 (10.4%)	2 (8.3%)
Strongly agree	31 (77.5%)	37 (92.5%)	34 (94.4%)	32 (97%)	32 (91.4%)	31 (91.2%)	25 (86.2%)	22 (91.7%)

Table 8-12: Attitudes towards perceived barriers to stopping smoking*

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 18)	Control (n = 32)	Intervention (n = 25)	Control (n = 31)	Intervention (n = 23)	Control (n = 18)
Too difficult	3 (7.5%)	4 (10%)	2 (11.1%)	3 (9.4%)	0 (0%)	1 (3.2%)	2 (8.7%)	2 (11.1%)
Boredom	28 (70%)	33 (82.5%)	14 (77.8%)	23 (71.9%)	17 (68%)	23 (74.2%)	15 (65.2%)	15 (83.3%)
Stress	21 (52.5%)	32 (80%)	13 (72.2%)	19 (59.4%)	16 (64%)	21 (67.7%)	14 (60.9%)	10 (55.6%)
Not sure how	3 (7.5%)	5 (12.5%)	0 (0%)	2 (6.3%)	0 (0%)	1 (3.2%)	0 (0%)	1 (5.6%)
No motivation	2 (5%)	2 (5%)	0 (0%)	2 (6.3%)	1 (4%)	4 (12.9%)	3 (13%)	1 (5.6%)
Worried about weight	1 (2.5%)	6 (15%)	0 (0%)	1 (3.1%)	0 (0%)	3 (9.7%)	0 (0%)	1 (5.6%)
Not enough support	15 (37.5%)	22 (55%)	2 (11.1%)	14 (43.8%)	2 (8%)	10 (32.3%)	3 (13%)	5 (27.8%)
People around me smoking	23 (57.5%)	19 (47.5%)	9 (50%)	14 (43.8%)	14 (56%)	10 (32.3%)	8 (34.8%)	8 (44.4%)
No good reasons to quit	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

* Responses based upon those self-reporting to be smoking at each of the time-points

The results pertaining to perceived barriers to stopping smoking in prison are presented in Table 8-12. At all time-points throughout the trial, boredom appeared to be the largest barrier preventing participants in both study arms from stopping smoking, closely followed by stress. Being exposed to other people smoking around them was also identified as a difficulty by a large proportion of intervention and control participants at all data collection points. At baseline, just over half of control participants and 37.5% of intervention participants stated that a lack of support was a barrier in preventing them from stopping smoking; however, post-intervention, much smaller numbers of intervention participants identified lack of support as a barrier. Although the proportions of control participants identifying lack of support as a barrier also decreased over the follow-up periods, the difference was more pronounced among the intervention arm participants.

8.12 Diet prevalence

8.12.1 Fruit and vegetable intake – descriptive results

The results pertaining to levels of fruit and vegetable consumption over the trial period are presented below in Table 8-13. More control than intervention participants reported to eating five portions of fruit and vegetables per day at baseline (20% versus 12.5% respectively). At follow-up one, there was a slight increase from baseline in the percentage of intervention arm participants reporting to eating five portions of fruit and vegetables a day in total, rising from 12.5% to 19.4% and this remained stable throughout the remaining follow-up periods. In contrast, from baseline to follow-up one, there was a slight decrease in the percentage of control participants reporting to eat five portions of fruit and vegetables a day in total, but this did increase incrementally over the remaining two follow-up periods.

The median number of days per week that fruit was consumed by participants remained stable over all four time-points and was the same for the intervention and the control group at seven days per week. The number of portions of fruit consumed by participants per day also remained relatively stable, with the

majority of participants in both arms reporting to eat one to two portions of fruit per day at all of the time-points (see Table 7 in Appendix 32).

The median number of days per week that vegetables were consumed by participants was not as stable and varied over the study time-periods and between the two study arms. Of the intervention participants that reported to consuming vegetables, the median number of days vegetables were consumed per week was seven at all-time points, except at follow-up two where this decreased to five days per week. As with the intervention participants, the control participants reported to consume vegetables a median of seven days per week at baseline, however, this decreased to four days per week by follow-up one. Over the remaining two follow-up periods, the median number of days control participants reported to consuming vegetables gradually increased, being 4.5 days at follow-up two and returning to seven days per week at the final follow-up time-point. Similar to fruit consumption, the number of portions of vegetables consumed by participants per day was comparable between the study arms and remained stable over the four time-points, with the majority of intervention and control participants reporting to eat one to two portions of vegetables per day (see Table 7 in Appendix 32).

8.12.2 Fruit and vegetable intake – multi-level model results

The null random effects model containing the random effect of individual and the intercept only explained significantly greater variation than the intercept-only single-level model ($p < 0.001$), indicating that the addition of the random effect was necessary and that it was appropriate to proceed with building a multi-level model for the data pertaining to fruit and vegetable intake. The results for the final multi-level fruit and vegetable intake model are presented in Table 8-14.

The self-reported consumption of five or more portions of fruit and vegetables per day varied over time, with participants at reduced odds of consuming five or more portions at follow-up one (*OR*: 0.77, 95% *CI*: 0.23 to 2.60) and follow-up two (*OR*: 0.92, 95% *CI*: 0.28 to 3.05) compared to baseline, but at increased odds of consuming five or more portions at follow-up three (*OR*: 2.09, 95% *CI*: 0.59 to 7.33); however, none of these differences were found to be significant (all $p > 0.05$). Participants from the intervention arm, in stable accommodation

prior to imprisonment and reporting to be in some form of employment prior to custody were at increased odds of self-reporting to consume five or more portions of fruit and vegetables per day than their counterparts, however, none of these differences were significant (all $p > 0.05$). Participants from Prison B, had been imprisoned before and reporting to suffer from at least one long term physical or mental health condition were at reduced odds of meeting the five portions of fruit and vegetables per day recommendation, however, again none of these differences were significant (all $p > 0.05$).

Table 8-13: Levels of fruit and vegetable consumption over the trial period

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 34)	Intervention (n = 29)	Control (n = 24)
Eats five portions of fruit and vegetables a day								
Yes	5 (12.5%)	8 (20%)	7 (19.4%)	3 (9.1%)	7 (20%)	4 (11.8%)	6 (20.7%)	6 (25%)
No	34 (85%)	30 (75%)	29 (80.6%)	30 (90.9%)	28 (80%)	30 (88.2%)	22 (75.9%)	18 (75%)
Not sure	1 (2.5%)	2 (5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3.4%)	0 (0%)
Number of days per week consumed fruit*								
Median (*IQR*)	7 (6.75 – 7)	7 (7 – 7)	7 (7 – 7)	7 (6 – 7)	7 (4 – 7)	7 (5 – 7)	7 (5.25 – 7)	7 (7 – 7)
Range	2 – 7	3 – 7	2 – 7	1 – 7	2 – 7	2 – 7	1 – 7	4 – 7
Number of days per week consumed vegetables**								
Median (*IQR*)	7 (4 – 7)	7 (2.75 – 7)	7 (3 – 7)	4 (2 – 7)	5 (3.26 – 7)	4.5 (2.25 – 7)	7 (3.25 – 7)	7 (3 – 7)
Range	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7

*Calculations based only on those reporting to eat fruit – those eating no fruit excluded from calculations
**Calculations based only on those reporting to eat vegetables – those eating no vegetables excluded from calculations

Table 8-14: Fruit and vegetable consumption multi-level model results

	OR	*P* value	95% *CI*	
Time – 6 weeks (reference: baseline)	0.77	0.675	0.23	2.60
Time – 10 weeks (reference: baseline)	0.92	0.895	0.28	3.05
Time – 18 weeks (reference: baseline)	2.09	0.251	0.59	7.33
Intervention arm (reference: control)	1.07	0.938	0.21	5.50
Age (years)	1.00	0.989	0.90	1.11
Prison B (reference: Prison A)	0.50	0.400	0.10	2.52
Non-white ethnic background (reference: White)	0.06	0.033	0.004	0.79
In stable accommodation prior to prison (reference: in unstable accommodation)	3.61	0.427	0.15	85.74
In form of employment prior to prison (reference: unemployed)	1.36	0.727	0.24	7.53
Been in prison before (reference: first time in prison)	0.70	0.744	0.08	6.10
Suffers from at least one long-term condition (reference: does not suffer from long-term condition)	0.87	0.879	0.13	5.57

The only significant association was between ethnicity and consumption, with non-White participants at significantly reduced odds of self-reporting to consume five or more portions of fruit and vegetables per day than White participants (*OR*: 0.06, 95% *CI*: 0.004 to 0.79, $p = 0.033$). There was no association between age and self-reported consumption of the recommended daily intake of fruit and

vegetables (*OR*: 1.00, 95% *CI*: 0.90 to 1.11, $p > 0.05$). However, again it must be stressed that these results discussed be interpreted with caution, as this study was a feasibility study and thus was not powered to detect differences between groups. A larger scale definitive study sufficiently powered would have the necessary precision to detect differences between study arms, and explore further the influence of the socio-demographic characteristics of participants on their fruit and vegetable intake.

8.12.3 Salt intake – descriptive results

The self-reported addition of salt to food, and median number of days foods high in salt were consumed by participants, are presented in Table 8-15. At baseline, self-reported addition of salt to food was the same for the intervention and control groups, with equal numbers of participants within each arm reporting to add or not add salt to their food. Over the remaining three follow-up periods, the percentage of intervention arm participants reporting to adding salt to their food gradually decreased, with just over one-quarter of intervention arm participants successfully followed-up at the final follow-up time-point reporting to add salt to their food. Such a trend was not observed in the control group. Among the control group, there was a slight decrease in the percentage of those that reported adding salt to their food at follow-up one, but this then increased to similar levels reported at baseline over the latter two follow-up periods.

Of the intervention arm participants that reported consuming foods high in salt, the median number of days that such foods were consumed over at baseline was five days per week. However, this did increase incrementally over the latter follow-up periods, being seven days per week by the final follow-up time-point. In contrast, the median number of days foods high in salt were consumed by control participants was relatively stable over the trial period, being five days per week at all time-points, except at follow-up one where this decreased to four days.

Table 8-15: Self-reported addition of salt to meals and intake of high-salt foods

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
Adds salt to food	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 32)	Intervention (n = 35)	Control (n = 34)	Intervention (n = 29)	Control (n = 24)
Yes	20 (50%)	20 (50%)	15 (41.7%)	13 (40.6%)	13 (37.1%)	18 (52.9%)	8 (27.6%)	10 (41.7%)
No	20 (50%)	20 (50%)	21 (58.3%)	19 (59.4%)	22 (62.9%)	16 (47.1%)	21 (72.4%)	14 (58.3%)
Number of days per week foods high in salt consumed*								
Median (*IQR*)	5 (3 – 7)	5 (3 – 7)	5 (2 – 7)	4 (2 – 7)	6 (2.75 – 7)	5 (2 – 7)	7 (3 – 7)	5 (2 – 7)
Range	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7	1 – 7

* Calculations based only on those reporting to eat foods high in salt– those eating no foods high in salt excluded from calculations

8.12.4 Salt intake – multi-level model results

The null random effects model containing the random effect of individual and the intercept only explained significantly greater variation than the intercept-only single-level model ($p < 0.001$), indicating that the addition of the random effect was necessary and that it was appropriate to proceed with building a multi-level model for the data pertaining to salt intake. The results for salt intake of the final multi-level model are presented in Table 8-16.

Table 8-16: Salt consumption multi-level model results*

	OR	*P* value	95% *CI*	
Time – 6 weeks (reference: baseline)	0.32	0.073	0.09	1.11
Time – 10 weeks (reference: baseline)	0.52	0.293	0.15	1.77
Time – 18 weeks (reference: baseline)	0.28	0.07	0.07	1.11
Intervention arm (reference: control)	0.65	0.80	0.02	17.83
Prison B (reference: Prison A)	0.04	0.072	0.001	1.33
In stable accommodation prior to prison (reference: in unstable accommodation)	0.91	0.977	0.001	512.94
In form of employment prior to prison (reference: unemployed)	0.25	0.437	0.008	8.05
Been in prison before (reference: first time in prison)	0.59	0.813	0.007	47.17
Suffers from at least one long-term condition (reference: does not suffer from long-term condition)	0.62	0.782	0.02	17.72

*Ethnicity was not included in the model as planned due to problems with the model converging when included

Participants were at reduced odds of adding salt to their food at follow-up one (*OR*: 0.32, 95% *CI*: 0.09 to 1.11), follow-up two *(OR*: 0.52, 95% *CI*: 0.15 to 1.77)

and follow-up three (*OR*: 0.28, 95% *CI*: 0.07 to 1.11) than when compared to baseline; however, none of the results were significant (all $p > 0.05$). Intervention arm participants; participants from Prison B; those in stable accommodation prior to custody; those in some form of employment prior to imprisonment; participants that had reported to being imprisoned before; and those reporting to suffer from at least one long term physical or mental health condition were all at reduced odds of adding salt to their food than their respective counterparts, however, none of these differences were statistically significant (all $p > 0.05$). Although the results of the multi-level model found no evidence of significant associations between study arm and the addition of salt to food, or between the socio-demographic characteristics of participants and the addition of salt to food, it must be stressed that these results must be interpreted with caution. As the study was a feasibility study, the study was not sufficiently powered to explore for significant differences between groups. Rather the focus of the study was to explore preliminary trends in the data to inform a future definitive effectiveness study. More details regarding the future definitive study are discussed in the final Discussion Chapter.

8.13 Diet knowledge

The diet knowledge scores of participants and their awareness of the fruit and vegetable intake recommendations are presented in Table 8-17. Knowledge of the recommended intake of fruit and vegetables appeared to improve throughout the period of the trial. At baseline, the majority of participants in each arm correctly identified that the recommended daily intake of fruit and vegetables per day was at least five portions; the percentage of intervention and control participants correctly identifying this guideline at baseline was very similar at 65% and 62.5% respectively. Intervention arm participants' knowledge regarding fruit and vegetable intake did appear to improve post-intervention, with greater proportions correctly identifying that the recommended intake was five portions or more over the three follow-up periods than when compared to baseline (follow-up one: 77.8%, follow-up two: 88.6% and follow-up three: 79.3%). Although not recipients of the peer-led intervention, a similar trend was observed with control participants, as the percentage of control participants correctly identifying the

fruit and vegetable intake guideline increased incrementally over the remaining follow-up periods (follow-up one: 66.7%, follow-up two: 70.6% and follow-up three: 79.2%)

Knowledge relating to dietary habits leading to health problems was overall very good prior to the peer-led intervention, with intervention arm participants answering a median of 4.5 questions correctly, while control participants answered a median of five questions correctly. This remained relatively stable over the remainder of the trial.

Table 8-17: Awareness of fruit and vegetable recommendations and overall diet knowledge score at each of the trial time-points

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 34)	Intervention (n = 29)	Control (n = 24)
Awareness of five or more portions								
Yes	26 (65%)	25 (62.5%)	28 (77.8%)	22 (66.7%)	31 (88.6%)	24 (70.6%)	23 (79.3%)	19 (79.2%)
No	14 (35%)	15 (37.5%)	8 (22.2%)	11 (33.3%)	4 (11.4%)	10 (29.4%)	6 (20.7%)	5 (20.8%)
Overall diet knowledge scores								
Median (*IQR*)	4.5 (3 – 5)	5 (4 – 5)	5 (4.25 – 5)	5 (4 – 5)	5 (4 – 5)	5 (4 – 5)	5 (4 – 5)	5 (5 – 5)
Range	0 – 5	3 – 5	0 – 5	1 – 5	0 – 5	0 – 5	3 – 5	3 – 5

8.14 Diet attitudes

Attitudes towards diet and the development of health conditions are presented in Table 8-18. At baseline, approximately 80% of intervention arm participants and 90% of control participants stated that they did believe that what people eat or drink could make a difference to their chances of getting heart disease, diabetes and high cholesterol. Furthermore, at all three-follow-up points post-intervention, the percentage of intervention and control participants reporting to hold such a belief was higher than when compared to baseline levels. The proportion of participants in each arm agreeing that food intake could make a difference in people's chances of developing cancer was smaller than for the other three conditions at baseline, however, in each arm more participants at baseline agreed than disagreed that food intake could impact upon the development of cancer. Furthermore, as with the other three health conditions, at all three-follow-up time-points post-intervention, the percentage of intervention and control participants reporting that food and drink intake could impact upon cancer development was higher than when compared to baseline levels.

The results regarding barriers to eating healthily are presented in Table 8-19.
At all time-points, a lack of choice appeared to be the largest barrier preventing participants from eating healthily. At baseline, just under 70% of intervention arm participants stated that a lack of choice was a barrier preventing them from eating healthy and this remained relatively stable throughout the trial, except at follow-up one where the proportion of intervention arm participants identifying this as a barrier dropped to 55.6%. Slightly more control participants than intervention participants stated that a lack of choice prevented them from eating healthily at the outset of the study, with 80% of control participants identifying this as a factor at baseline. Again, this remained relatively stable over the follow-up periods, dropping slightly to 70.8% at the final follow-up time-point. Other factors that were identified as barriers to eating healthily over the trial period were taste of food, uncertainty around the health value of food and the perception that healthy options are expensive, however, to a much lesser extent than lack of choice (all ≤ 30% at each of the time-points).

Table 8-18: Attitudes regarding diet leading to specific health problems at each of the trial time-points

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 34)	Intervention (n = 29)	Control (n = 24)
Can lead to heart disease								
Yes	34 (85%)	36 (90%)	33 (91.6%)	31 (93.9%)	34 (97.1%)	32 (94.1%)	27 (93.1%)	23 (95.8%)
No	2 (5%)	2 (5%)	1 (2.8%)	0 (0%)	0 (0%)	1 (2.9%)	2 (6.9%)	0 (0%)
Not sure	4 (10%)	2 (5%)	2 (5.6%)	2 (6.1%)	1 (2.9%)	1 (2.9%)	0 (0%)	1 (4.2%)
Can lead to diabetes								
Yes	33 (82.5%)	37 (92.5%)	34 (94.4%)	31 (93.9%)	35 (100%)	32 (94.1%)	27 (93.1%)	24 (100%)
No	1 (2.5%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3.4%)	0 (0%)
Not sure	6 (15%)	2 (5%)	2 (5.6%)	2 (6.1%)	0 (0%)	2 (5.9%)	1 (3.4%)	0 (0%)
Can lead to cancer								
Yes	23 (57.5%)	26 (65%)	30 (83.4%)	23 (69.7%)	26 (74.3%)	23 (67.6%)	22 (75.9%)	19 (79.1%)
No	6 (15%)	4 (10%)	3 (8.3%)	0 (0%)	1 (2.9%)	2 (5.9%)	2 (6.9%)	1 (4.2%)
Not sure	11 (27.5%)	10 (25%)	3 (8.3%)	10 (30.3%)	8 (22.8%)	9 (26.5%)	5 (17.2%)	4 (16.7%)

Table 8-18 continued: Attitudes regarding diet leading to specific health problems at each of the trial time-points

Can lead to high cholesterol								
Yes	32 (80%)	34 (85%)	35 (97.2%)	31 (93.9%)	35 (100%)	32 (94.1%)	28 (96.6%)	22 (91.7%)
No	2 (5%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3.4%)	0 (0%)
Not sure	6 (15%)	5 (12.5%)	1 (2.8%)	2 (6.1%)	0 (0%)	2 (5.9%)	0 (0%)	2 (8.3%)

Table 8-19: Attitudes towards perceived barriers to eating healthily

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 34)	Intervention (n = 29)	Control (n = 24)
Unsure of which foods healthy	6 (15%)	6 (15%)	7 (19.4%)	9 (27.3%)	4 (11.4%)	5 (14.7%)	2 (6.9%)	5 (20.8%)
Healthy options expensive	7 (17.5%)	10 (25%)	7 (19.4%)	7 (21.2%)	5 (14.3%)	6 (17.6%)	7 (24.1%)	5 (20.8%)
Lack of choice	27 (67.5%)	32 (80%)	20 (55.6%)	26 (78.8%)	24 (68.6%)	28 (82.4%)	20 (69%)	17 (70.8%)
No motivation	1 (2.5%)	4 (10%)	2 (5.6%)	3 (9.1%)	1 (2.9%)	3 (8.8%)	1 (3.4%)	3 (12.5%)
Not enough support	6 (15%)	5 (12.5%)	3 (8.3%)	7 (21.2%)	1 (2.9%)	6 (17.6%)	5 (17.2%)	3 (12.5%)
No good reasons	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2.9%)	2 (5.9%)	0 (0%)	0 (0%)
Too difficult	1 (2.5%)	5 (12.5%)	3 (8.3%)	2 (6.1%)	5 (14.3%)	1 (2.9%)	3 (10.3%)	1 (4.2%)
Taste of food	12 (30%)	10 (25%)	8 (22.2%)	9 (27.3%)	7 (20%)	6 (17.6%)	3 (10.3%)	5 (20.8%)

8.15 Physical activity prevalence

8.15.1 Descriptive results

The self-reported physical activity levels of participants are presented in Table 8-20. At all four time-points throughout the study, the majority of participants within each of the two study arms reported to partaking in the governments recommended 150 minutes or more of moderate physical activity per week.

The percentage of participants in both study arms reporting to having undertaken moderate physical activity increased slightly over each of the four-data collection time-points. As is evident from Table 8-20, the median number of minutes moderate physical activity was performed by those engaging in such activity was higher among intervention participants at all time-points, except follow-up one where the reverse was true.

Regarding vigorous physical activity, at all of the time-points, except for follow-up two, more intervention participants than control participants reported to undertaking vigorous physical activity. The proportion of intervention participants engaging in vigorous physical activity was relatively stable for the first two data collection time-points, at approximately 65%, but this decreased to 58.6% by the final follow-up time-point. In contrast, the proportion of control participants engaging in vigorous physical activity over each time point was more variable, with 57.5% reporting to engage in this form of physical activity at baseline, increasing to 60.6% at follow-up two and then decreasing to 54.2% at the final follow-up point. Among those participants reporting to engage in vigorous physical activity, the median number of minutes such activity was performed was higher among control participants than intervention participants at baseline and at the final follow-up, with control participants reporting 60 minutes more vigorous activity on each of these occasions. For follow-up one and two however, there was very little difference in the median number of minutes vigorous physical activity was performed between the two arms (only 7.5 minutes on each occasion).

Table 8-20: Self-reported levels of physical activity at each of the trial time-points

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
Partakes in 150 minutes or more of physical activity	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 33)	Intervention (n = 29)	Control (n = 24)
Yes	28 (70%)	31 (77.5%)	24 (66.7%)	23 (69.7%)	24 (68.6%)	23 (69.7%)	18 (62.1%)	18 (75%)
No	12 (30%)	9 (22.5%)	12 (33.3%)	10 (30.3%)	11 (31.4%)	10 (30.3%)	11 (37.9%)	6 (25%)
Undertaken moderate physical activity in previous week								
Yes	24 (60%)	24 (60%)	22 (61.1%)	20 (60.6%)	22 (65%)*	21 (63.6%)	20 (69%)	16 (66.7%)
No	16 (40%)	16 (40%)	14 (38.9%)	13 (39.4%)	12 (35%)*	12 (36.4%)	9 (31%)	8 (33.3%)
Minutes of moderate physical activity per week**								
Median (*IQR*)	195 (71.25 – 420)	120 (60 – 303.75)	120 (82.5 – 210)	180 (108.75 – 375)	195 (120 – 420)	135 (70 – 210)	240 (120 – 405)	225 (107.5 – 382.5)
Range	10 – 3780	20 – 1800	30 – 840	30 – 2520	30 – 2100	30 – 600	40 – 1440	45 – 1680

Table 8-20 continued: Self-reported levels of physical activity at each of the trial time-points

Undertaken vigorous physical activity in previous week								
Yes	26 (65%)	23 (57.5%)	23 (63.9%)	16 (48.5%)	20 (57.1%)	20 (60.6%)	17 (58.6%)	13 (54.2%)
No	14 (35%)	17 (42.5%)	13 (36.1%)	17 (51.5%)	15 (42.9%)	13 (39.4%)	12 (41.4%)	11 (45.8%)
Minutes of vigorous physical activity per week* **								
Median (*IQR*)	120 (82.5 – 240)	180 (100 – 360)	135 (90 – 200)	127.5 (70 – 252.5)	240 (120 – 300)	232.5 (127.5 – 311.25)	180 (120 – 240)	240 (135 – 300)
Range	30 – 600	20 – 2520	20 – 630	20 – 840	50 – 1680	60 – 840	60 – 1470	60 – 1470

*Due to missing data of one participant, calculations based on 34 participants who responded to this question
**Calculations based only on those that undertook moderate physical activity – those who did none were excluded from calculations
***Calculations based only on those that undertook vigorous physical activity – those who did none were excluded from calculations

8.15.2 Multi-level model results

The null random effects model containing the random effect of individual and the intercept only explained significantly greater variation than the intercept-only single-level model ($p < 0.001$), indicating that the addition of the random effect was necessary and that it was appropriate to proceed with building a multi-level model for the physical activity data. The results for the final multi-level physical activity model are presented in Table 8-21.

Table 8-21: Physical activity multi-level model results

	OR	*P* value	95% *CI*	
Time – 6 weeks (reference: baseline)	0.70	0.419	0.29	1.66
Time – 10 weeks (reference: baseline)	0.72	0.458	0.30	1.72
Time – 18 weeks (reference: baseline)	0.58	0.265	0.22	1.50
Intervention arm (reference: control)	0.92	0.863	0.34	2.45
Age (years)	0.98	0.432	0.92	1.04
Prison B (reference: Prison A)	1.12	0.822	0.42	2.97
Non-white ethnic background (reference: White)	1.20	0.762	0.37	3.87
In stable accommodation prior to prison (reference: in unstable accommodation)	3.13	0.171	0.61	15.98
In form of employment prior to prison (reference: unemployed)	6.28	0.001	2.10	18.80
Been in prison before (reference: first time in prison)	0.94	0.929	0.22	3.97
Suffers from at least one long-term condition (reference: does not suffer from long-term condition)	1.27	0.665	0.43	3.70

Participants were at reduced odds of undertaking the recommended 150 minutes or more of physical activity per week at follow-up one (*OR*: 0.70, 95% *CI*: 0.29 to

1.66), follow-up two (*OR*: 0.72, 95% *CI*: 0.30 to 1.72) and follow-up three (*OR*: 0.58, 95% *CI*: 0.22 to 1.50) than when compared to baseline; however, none of the results were significant (all $p > 0.05$). Intervention arm participants and those that had been imprisoned before were at reduced odds of reporting to engage in 150 minutes or more of physical activity per week than their counterparts, however, neither of these differences were statistically significant (all $p > 0.05$). There was a negative association with age and physical activity, with each yearly increase in age reducing the odds of participants engaging in the recommended guideline (*OR*: 0.98, 95% *CI*: 0.92 to 1.04), however, again this difference was found to be non-significant ($p > 0.05$). Participants who were employed prior to prison, from Prison B, were from a non-White ethnic background, in stable accommodation prior to custody and reporting to suffer from a long term physical or mental health condition were all at increased odds of reporting to engage in 150 minutes or more of physical activity per week; however, none of these differences were statistically significant (all $p > 0.05$). As discussed in the preceding results subsections, these results should be interpreted with caution as the study was not powered to detect significant differences between groups, as the primary aim of this study was to explore the feasibility of undertaking a trial rather than exploring the effectiveness of the peer-led intervention. Such a definitive trial would have necessary power and precision to detect differences between study arms and explore further the influence of the socio-demographic characteristics of participants on their levels of physical activity.

8.16 Physical activity knowledge

Participants' knowledge pertaining to recommended physical activity levels are presented in Table 8-22. At the start of the trial, just over half of the participants in each arm stated that they had not heard about the official recommended levels of physical activity for adults their age. Very few of the intervention and control participants stated that they actually knew what the recommended levels of physical activity were (7.5% and 15% respectively). Intervention arm participants did appear to suggest that this improved post-delivery of the peer-intervention however, as approximately 40% of the intervention arm participants reported to knowing the recommended levels of physical activity at follow-up one and at the

final follow-up time-point. In contrast, the percentage of control participants reporting to know the official recommended levels of physical activity was lower at all follow-up time-points when compared to baseline levels (follow-up one: 9.1%, follow-up two: 9.1% and follow-up three: 12.5%). As is evident from Table 8-22, at all time-points, very few participants within each arm actually correctly estimated the recommended guidelines, with both intervention and control participants overestimating the number of minutes that adults should undertake moderate physical activity for per week to maintain good health.

8.17 Physical activity attitudes

Participants' attitudes towards physical activity and health are presented in Table 8-23. All, or almost all, of intervention and control participants agreed or strongly agreed that physical activity can help individuals lose weight, strengthen their muscles and improve their heart and lung fitness; this trend was observed at baseline and over all three follow-up periods throughout the trial. In terms of attitudes towards physical activity and the risk of disease, at baseline approximately 90% of intervention participants agreed or strongly agreed that physical activity can help to reduce the risk of disease; this increased to 97% at follow-up one, and by the final time-point, all intervention arm participants successfully followed-up agreed with this statement. Similarly, 90% of control participants agreed or strongly agreed that activity can reduce the risk of disease at baseline, remaining stable over the first two follow-up periods and rising to 100% by the final data collection point. There was a slightly mixed response in attitudes towards physical activity and depression, with responses varying according to study arm. Over the follow-up periods, more intervention participants agreed or strongly agreed that physical activity could help to reduce depression than the proportion that originally agreed with such at baseline. In contrast, at follow-ups one and two, fewer control participants agreed that physical activity can help with depression than the proportion that agreed that it could at baseline; however, by the final time-point the proportion believing that physical activity can help to combat depression was slightly higher than baseline levels (92.5% and 95.8% respectively).

Table 8-22: Knowledge of recommended levels of physical activity

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 33)	Intervention (n = 29)	Control (n = 24)
Knowledge pertaining to official recommendations								
Knows recommendations	3 (7.5%)	6 (15%)	14 (38.9%)	3 (9.1%)	9 (25.7%)	3 (9.1%)	12 (41.4%)	3 (12.5%)
Heard of recommendations	15 (37.5%)	10 (25%)	13 (36.1%)	11 (33.3%)	18 (51.4%)	10 (30.3%)	15 (51.7%)	12 (50%)
Not heard of recommendations	22 (55%)	24 (60%)	9 (25%)	19 (57.6%)	8 (22.9%)	20 (60.6%)	2 (6.9%)	9 (37.5%)
Number correctly estimating guidelines								
Underestimated	4 (10%)	10 (25%)	9 (25%)	6 (18.74%)*	6 (17.14%)	5 (15.16%)	4 (13.79%)	8 (33.33%)
Correctly estimated	0 (0%)	2 (5%)	1 (2.78%)	1 (3.13%)*	4 (11.43%)	2 (6.06%)	0 (0%)	1 (4.17%)
Overestimated	36 (90%)	28 (70%)	26 (72.22%)	25 (78.13%)*	25 (71.43%)	26 (78.78%)	25 (86.3%)	15 (62.5%)

*Due to missing data of one participant, calculations based on 32 participants who responded to this question

Table 8-23: Attitudes towards the health benefits of physical activity at each of the trial time-points

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention	Control	Intervention	Control	Intervention	Control	Intervention	Control
Help people lose weight	(n = 40)	(n = 40)	(n = 36)	(n = 33)	(n = 35)	(n = 33)	(n = 29)	(n = 24)
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neither agree nor disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	12 (30%)	7 (17.5%)	7 (19.4%)	8 (24.2%)	5 (14.3%)	9 (27.3%)	4 (13.8%)	3 (12.5%)
Strongly agree	28 (70%)	32 (80%)	29 (80.6%)	25 (75.8%)	30 (85.7%)	23 (69.7%)	25 (86.2%)	21 (87.5%)
Not sure	0 (0%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)
Reduce risk of disease								
Strongly disagree	0 (0%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	3 (7.5%)	0 (0%)	0 (0%)	0 (0%)	1 (2.9%)	0 (0%)	0 (0%)	0 (0%)
Neither agree nor disagree	1 (2.5%)	0 (0%)	1 (2.8%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	10 (25%)	11 (27.5%)	8 (22.2%)	12 (36.4%)	7 (20%)	10 (30.3%)	7 (24.1%)	7 (29.2%)
Strongly agree	25 (62.5%)	25 (62.5%)	27 (75%)	18 (54.5%)	25 (71.4%)	19 (57.6%%)	22 (75.9%)	17 (70.8%)

Table 8-23 continued: Attitudes towards the health benefits of physical activity at each of the trial time-points

Not sure	1 (2.5%)	3 (7.5%)	0 (0%)	3 (9.1%)	2 (5.7%)	4 (12.1%)	0 (0%)	0 (0%)
Reduce depression								
Strongly disagree	1 (2.5%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	1 (2.8%)	1 (3%)	0 (0%)	1 (3%)	1 (3.4%)	0 (0%)
Neither agree nor disagree	2 (5%)	0 (0%)	0 (0%)	1 (3%)	3 (8.6%)	0 (0%)	0 (0%)	1 (4.2%)
Agree	13 (32.5%)	11 (27.5%)	10 (27.8%)	10 (30.3%)	6 (17.1%)	10 (30.3%)	8 (27.6%)	8 (33.3%)
Strongly agree	21 (52.5%)	26 (65%)	24 (66.6%)	19 (57.6%)	26 (74.3%)	18 (54.6%)	20 (69%)	15 (62.5%)
Not sure	3 (7.5%)	2 (5%)	1 (2.8%)	2 (6.1%)	0 (0%)	4 (12.1%)	0 (0%)	0 (0%)
Strengthen muscles								
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neither agree nor disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	9 (22.5%)	7 (17.5%)	5 (13.9%)	7 (21.2%)	5 (14.3%)	6 (18.2%)	3 (10.3%)	1 (4.2%)
Strongly agree	31 (77.5%)	33 (82.5%)	31 (86.1%)	26 (78.8%)	30 (85.7%)	27 (81.8%)	26 (89.7%)	23 (95.8%)
Not sure	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Table 8-23 continued: Attitudes towards the health benefits of physical activity at each of the trial time-points

Improve heart/lung fitness								
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neither agree nor disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	12 (30%)	8 (20%)	6 (16.7%)	10 (30.3%)	5 (14.3%)	7 (21.2%)	3 (10.3%)	2 (8.3%)
Strongly agree	28 (70%)	31 (77.5%)	30 (83.3%)	23 (69.7%)	30 (85.7%)	26 (78.8%)	26 (89.7%)	22 (91.7%)
Not sure	0 (0%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

The results pertaining to perceived barriers to undertaking physical activity are presented in Table 8-24. At all time-points throughout the trial, limited access to the gymnasium appeared to be the largest barrier preventing participants in both the intervention and control arm from undertaking physical activity, closely followed by spending too much time behind their cell door. However, it must be acknowledged that at follow-ups two and three, fewer participants in each arm identified these as limiting factors than when compared to baseline and follow-up one levels. One potential confounding factor that may explain this finding is that a number of participants successfully followed-up over these latter follow-up periods had been released from custody at that respective follow-up (follow-up two: 5, follow-up three: 11), and thus these barriers specific to the prison may no longer have been applicable. Other factors that were frequently identified as barriers to undertaking physical activity over the trial period were a lack of motivation, no time, a lack of equipment and no energy, however, to a much lesser extent than limited gymnasium access and too much time spent in cell (all ≤ 40% at each of the time-points).

8.18 Wellbeing

Table 8-25 displays the median WEMWBS score for each study arm at baseline and at each of the follow-up points post-intervention. Intervention arm participants' median wellbeing score increased incrementally over the trial period, rising from 45 at baseline to 51 by the final follow-up time-point, suggesting that that their wellbeing improved post-intervention. In contrast, control participants' median overall wellbeing score was lower than at baseline levels at follow-ups one and two, however, this did increase to similar levels observed in the intervention arm by the final follow-up time-point; increasing by 6 points from 46 at baseline to 52 at the final follow-up period.

Table 8-24 Attitudes towards perceived barriers to physical activity

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 33)	Intervention (n = 29)	Control (n = 24)
Do not enjoy it	1 (2.5%)	1 (2.5%)	0 (0%)	1 (3%)	1 (2.9%)	0 (0%)	1 (3.4%)	0 (0%)
Lack of motivation	13 (32.5%)	14 (35%)	12 (33.3%)	13 (39.4%)	9 (25.7%)	12 (36.4%)	4 (13.8%)	6 (25%)
No time	7 (17.5%)	8 (20%)	11 (30.6%)	10 (30.3%)	6 (17.1%)	11 (33.3%)	4 (13.8%)	6 (25%)
No energy	9 (22.5%)	10 (25%)	6 (16.7%)	6 (18.2%)	6 (17.1%)	5 (15.2%)	4 (13.8%)	3 (12.5%)
Nobody to do it with	4 (10%)	8 (20%)	2 (5.6%)	3 (9.1%)	1 (2.9%)	5 (15.2%)	3 (10.3%)	1 (4.2%)
Limited gym access	27 (67.5%)	24 (60%)	22 (61.1%)	21 (63.6%)	16 (45.7%)	15 (45.5%)	13 (44.8%)	12 (50%)
Lack of equipment	9 (22.5%)	13 (32.5%)	6 (16.7%)	6 (18.2%)	8 (22.9%)	6 (18.2%)	6 (20.7%)	7 (29.2%)
Too tired	5 (12.5%)	4 (10%)	2 (5.6%)	1 (3%)	2 (5.7%)	2 (6.1%)	2 (6.9%)	2 (8.3%)
Lack of knowledge	5 (12.5%)	3 (7.5%)	2 (5.6%)	3 (9.1%)	1 (2.9%)	2 (6.1%)	1 (3.4%)	3 (12.5%)
Poor health	9 (22.5%)	5 (12.5%)	3 (8.3%)	6 (18.2%)	2 (5.7%)	7 (21.2%)	3 (10.3%)	2 (8.3%)
Worry about injury	4 (10%)	2 (5%)	2 (5.6%)	1 (3%)	1 (2.9%)	1 (3%)	2 (6.9%)	1 (4.2%)
Hard work	0 (0%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Table 8-24 continued: Attitudes towards perceived barriers to physical activity

Boring	0 (0%)	1 (2.5%)	1 (2.8%)	2 (6.1%)	3 (8.6%)	0 (0%)	2 (6.9%)	0 (0%)
Too overweight	3 (7.5%)	0 (0%)	1 (2.8%)	1 (3%)	0 (0%)	1 (3%)	1 (3.4%)	0 (0%)
No suitable places	3 (7.5%)	5 (12.5%)	2 (5.6%)	4 (12.1%)	4 (11.4%)	6 (18.2%)	1 (3.4%)	2 (8.3%)
Too much time in cell	23 (57.5%)	18 (45%)	19 (52.8%)	25 (75.8%)	15 (42.9%)	14 (42.4%)	9 (31%)	5 (20.8%)
Other – busy since release	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2.9%)	0 (0%)	1 (3.4%)	0 (0%)
Other – money constraints	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (6.9%)	0 (0%)

Table 8-25: Overall wellbeing score at each of the study time-points

	Baseline		**Follow-up 1**		**Follow-up 2**		**Follow-up 3**	
Total wellbeing score	Intervention (n = 40)	Control (n = 40)	Intervention (n = 36)	Control (n = 33)	Intervention (n = 35)	Control (n = 33)	Intervention (n = 29)	Control (n = 24)
Median (*IQR*)	45 (38.5 – 52)	46 (39.25 – 55.75)	47 (38.25 – 53)	42 (37 – 54)	48 (41 – 57)	45 (41.5 – 51.5)	51 (37.5 – 57)	52 (40 – 55.5)
Range	28 – 70	19 – 69	23 – 66	29 – 62	29 – 64	24 – 67	29 – 69	29 – 62

8.19 Chapter summary

This chapter presented the results of the phase two element of the PhD project, a summary of which is as follows, with more detail placed upon the feasibility findings given that the feasibility of a definitive trial was the primary focus of the research. The target of recruiting 80 participants was achieved in a suitable time-frame, with only small proportions excluded due to ineligibility. Overall, the process of randomisation appeared to be acceptable to participants, with very few refusing to participate or withdrawing from the study due to the randomisation procedure.

Attendance to the peer-led intervention was average, with more participants from Prison B than Prison A attending the sessions. Numerous reasons were recorded for missed intervention sessions, with the most frequent reason being that participants had changed their mind about wanting to address their NCD risk-behaviour(s). Most of the intervention components were delivered fully as intended or delivered partially, with the peer-workers rigidly following the instructions provided in the intervention manual. The primary reason for partial delivery was due to a lack of compliance in participants keeping behaviour diaries.

The peer-led intervention appeared to be acceptable to participants, with most finding it helpful and successful in modifying their NCD risk-behaviour(s); however, this was most pronounced with regards to smoking. The weekly group sessions, and the helpfulness and appropriateness of the peer-workers, alongside the provision of smoking cessation medications, were all valued by participants. Some participants did identify areas where the intervention could be improved, namely through increasing its length and ensuring that stop smoking medications are made available to participants in a timely manner.

It was evident that contamination did occur, with information, and to a lesser extent materials, shared outside of the peer-led intervention sessions. Moreover, some control participants reported directly speaking to the peer-workers about modifying their own smoking, diet and physical activity behaviour. Retention over the trial period was overall quite good, with very few differences in those retained and lost to follow-up at each of the follow-up time-points. Although the completion

rates for the questionnaires were high over all time-points, there were difficulties in the latter follow-up periods in obtaining the more objective measures from participants, and this was primarily a result of them no longer being resident in either of the study prison establishments at these time-points.

Although not powered to detect differences between groups, as the main focus of this study was to explore the feasibility objectives summarised above, the results of the multi-level models did identify trends in the smoking, diet and physical activity prevalence data; these will be discussed further in the following Discussion Chapter. Additionally, trends over time were apparent in the knowledge of participants, with the descriptive analyses suggesting that knowledge in the area of the impact of second hand smoking on children improved among the intervention arm, with knowledge of fruit and vegetable recommendations appearing to improve among both study arms post-delivery of the peer-led intervention. The following chapter discusses in-depth the findings of this phase two study, along with the qualitative findings from phase one, finalising with an overall conclusion of this thesis and recommendations for policy, practice, and future research.

Chapter 9 Discussion

9.1 Introduction

The overarching aim of this thesis was to explore the feasibility of conducting a full-scale definitive randomised controlled trial exploring the effectiveness of a peer-led intervention to modify the NCD risk-behaviour of prisoners. Two very specific objectives were set to achieve this aim. The first was to explore the views of key-stakeholders regarding the NCD risk-behaviours in the prison environment, along with their views towards a peer-led intervention to modify these risk-behaviours, so that an appropriate peer-led intervention could be developed. The second was to explore the feasibility of undertaking a definitive trial through assessment of the feasibility of the intervention itself and possible trial procedures. A mixed methods approach utilising a qualitative design for phase one and a quantitative design for phase two was adopted. The findings of these individual phases have been presented previously in this thesis. This final Discussion Chapter presents an integrated discussion of the main findings from this mixed methods study, highlighting the main implications of these for a future definitive trial exploring the effectiveness of a peer-led intervention to modify the NCD risk-behaviours of prisoners. The strengths and limitations of the study are presented. The chapter finalises with an overall conclusion, highlighting the implications of this research for policy, practice and future research. A dissemination strategy is also provided.

This novel study exploring the use of a peer-led intervention to modify prisoners' NCD risk-behaviours has demonstrated that, with appropriate planning, a randomised controlled trial examining the effectiveness of a peer-led intervention to encourage NCD risk-behaviour change among prisoners can be conducted within the prison environment. The following section of this chapter critically discusses the main findings from this PhD study regarding the feasibility of the peer-led intervention itself, followed by an in-depth discussion of the feasibility of the randomised controlled trial design procedures that were employed throughout the phase two study.

9.2 The feasibility of the intervention

9.2.1 The feasibility of implementing the intervention in the prison environment

In this study, a number of factors were initially identified as potential barriers to successful implementation of the peer-led intervention, including finding the right peer to deliver the intervention, the likely turnover of prisoner peer-workers, potential abuses of the intervention, and regime and logistical factors interfering with intervention delivery. The extent to which each of these potential barriers went on to impact upon the implementation and delivery of the peer-led intervention during phase two varied and is discussed below.

Phase one identified that the requirement of prisoners to attend work or education during the working week could potentially pose problems to the implementation of the peer-led intervention, as there is an explicit focus on ensuring that prisoners are engaged with meaningful and purposeful activity while in custody, with attendance at work and education perceived as the primary form of purposeful activity in prison. One of the main aims of Her Majesty's Prisons and Probation Service (HMPPS, formerly NOMS) is to rehabilitate offenders (HMPPS, 2018), with work and education clear forms of rehabilitative activity that can enhance prisoners' prospects on release from custody, and thus reduce their likelihood of reoffending.

The focus on attendance at work and education did impact on the peer-led intervention, playing a highly influential role in the decision to schedule the peer-intervention group sessions over a maximum period of six-weeks. The tension between organising delivery of prisoner health interventions around other commitments, such as work and education, is by no means unique to this study, and has been reported in other prison-based studies involving delivery of peer-led health initiatives (Scott et al., 2004), and health interventions more widely (Crospey et al., 2008; Ford et al., 2013). The importance placed upon work and education has clear potential to impede the implementation of a peer-led intervention in a future definitive trial, particularly if the decision was made to extend the length of the intervention beyond six-weeks, which was a suggestion of some participants and is discussed in greater depth later in this chapter.

There are a number of potential ways in which this barrier may be overcome in a future definitive trial. One would be to emphasise to HMPPS the value of engaging with health initiatives to reduce health-risk behaviours, and the potential links that such may have with regards to rehabilitation (NHS England, 2016b; WHO, 2017), as reoffending and the rehabilitation of offenders is a key strategic priority of HMPPS (HMPPS, 2018). This could potentially lead to the intervention itself being classified as meaningful and purposeful activity, so that the intervention would be seen as equally important as work and education. The second would be to schedule the weekly group sessions outside of the core working week, such as on evenings and weekends, so that the intervention would not be competing with prisoners' requirement at work or education. However, if taking the latter approach, difficulties could be experienced in obtaining prison officer supervision to facilitate this, as prisoner officer numbers are at lower levels during these quieter periods.

This study confirmed the desirable qualities to look for in a prisoner peer-worker to deliver peer-led interventions in prisons. This supports those identified in the existing literature, including being a good role-model (Sirdifield, 2006), having altruistic motivations to work in the peer-role as opposed to self-centred ones (Davies, 1994; Perrin, 2017), and being trustworthy (Bailey and Kerlin, 2015; Edgar et al., 2011). Nonetheless, concerns were raised regarding the ability to find the right peer to deliver the intervention, particularly from the point of view of being able to find a peer possessing the necessary skills to deliver the role, and one that is genuinely motivated by altruistic as opposed to self-centred motivations. These concerns did not materialise however, and there was acceptable recruitment of peer-workers with the required qualities to deliver the intervention for this study.

Nonetheless, there was one barrier to recruitment that must be considered in a future definitive trial – the need for security clearance. Of the prisoner applicants that applied to work in the role across the two sites, just over one-third were refused on the basis of not being approved by the prison's security department. Boyce et al. (2009) in their exploration of the St. Giles scheme also reported security clearance to be a negating factor in the recruitment of peer-workers, with one of the staff members interviewed reporting less than 10% of all those

prisoners applying to work in the St. Giles advisor role being approved by the prison security department. Based upon the findings of this study, and those of Boyce et al. (2009), it is reasonable to assume that a future definitive trial will experience problems in obtaining security clearance for some prisoners to work in the peer-role. There is little action that could overcome this barrier however, as all peer-roles in prison require prisoners to be security approved, with such a measure justified in light of the many risks these types of intervention pose to the security and order of the prison, which are discussed later in this chapter.

The turnover of suitable peer-workers as a result of prisoner transfer or release into the community was another potential barrier to the implementation of the peer-led intervention that was identified by the phase one participants. This concern is indeed well founded in the literature, with an array of different types of peer-intervention in the UK and internationally reported to have experienced such peer-worker attrition (Brooker and Sirdifield, 2007; Boyce et al., 2009; Delveaux and Blanchette, 2000; Magee and Foster, 2011; Scott et al., 2004). Although this study did experience some level of peer-worker attrition due to prisoner transfer, the extent to which attrition due to transfer or release occurred was not as great as had been anticipated, and this in part reflected the peer-worker attrition mitigation measures that had been introduced. Specifically, only those whose prison stay (or expected prison stay in the case of remand prisoners) spanned at least the intervention period were considered for the role, with thorough screening measures put in place to determine the likely stay of potential peer-workers. Moreover, where possible, the peer-workers that were recruited were put on hold to prevent them from being transferred. As a result, none of the peer-workers that were recruited were released, and only two were transferred prior to the completion of the intervention. Based on these findings, it is recommended that a future definitive trial, and other studies exploring peer-led health schemes in prison, take similar measures to mitigate against peer-worker attrition, and the likely impact such would have on delivery and subsequent evaluation of the peer-led intervention.

Nonetheless, a small level of peer-worker attrition did occur; three withdrew from the role due to other commitments within the prison, two were lost due to transfer, while one withdrew due to stressful personal circumstances. This attrition, along

with the limited number of peer-workers recruited in the first place, meant that the research did not meet the target of having one peer-worker per prison wing at each of the two sites. This had the potential to impact on the delivery of the intervention, as this target was set to ensure that all intervention arm participants were able to access a peer-worker for one-to-one support outside of the group sessions if they so wished. This was mitigated as much as possible however, through encouraging the peer-workers permitted with greater freedom to move around the prison to visit the different wings on a frequent basis throughout the period of delivery. Anecdotal discussions during the group sessions suggested that this process of having a roaming peer-worker seemed to work, with frequent reference made to peer-workers visiting wings to check on the progress of participants.

The barriers discussed above in the recruitment and retention of peer-workers would need to be considered for a definitive trial, given that such a trial would be conducted on a much larger scale (i.e. to a much larger cohort of participants than there were in this study). It would be unreasonable to expect a small pool of peer-workers to deliver an intervention to numerous rolling cohorts of prisoners over a short space of time to meet the necessary sample size for an adequately powered definitive trial, as this could impose a significant burden on the peer-workers and potentially lead to burnout. Indeed, studies where prison-based peer-workers have been reported to work for long hours or have felt to be constantly 'on call' have recounted the unreasonable burden that this places on the peer-workers (Boothby, 2011; Jaffe, 2012b). In order to recruit and retain enough peer-workers for a larger trial, strategies such as the following could potentially be employed;

- Incentivising the role to increase the number of prisoners applying to work in the role
- Over-recruiting peer-workers to mitigate against attrition
- Ensuring robust procedures are in place to hold peer-workers at prison establishments to ensure they are not transferred to another prison

The phase one study identified numerous regime and logistical factors that may have impeded successful delivery of the peer-led intervention during phase two, such as problems with prisoner movement, locating a suitable venue to the hold

group sessions, and a lack of prison officers to facilitate the delivery of the group sessions. These concerns that were raised by the prisoner and staff participants are indeed substantiated by the existing literature, with all of these factors reported to have impacted upon the delivery of different services provided in English and Welsh prisons. For instance, the lack of prison officer numbers and the resultant impact such has had on the ability to escort prisoners to receive different services, such as healthcare and resettlement, has been frequently reported (Criminal Justice Alliance, 2012; HMIP, 2017; The Howard League for Penal Reform, 2017), as has the cancellation of services due to a scarcity of prison officers to ensure safe delivery (Social Exclusion Unit, 2002). Moreover, the authors of an evaluation of a peer-led mental health intervention in HMP Liverpool reported the great difficulties experienced in sourcing a suitable venue in the prison environment to deliver the peer-mentoring services (Mentor2work, 2005, as cited in South et al., 2014).

These barriers were largely overcome during the phase two study however, primarily as a result of the close working of the researcher with the activities manager and the senior management teams at each of the prison sites, to ensure that the intervention could be delivered to fit with the existing regime and the logistical resources available. For instance, at Prison A, where prisoner movement is more strict and difficult to facilitate due to the security category of the establishment, intervention participants were added to the regular call-ups list which always has a prisoner officer detailed to carry out prisoner movements, meaning that an extra prison officer was not required to facilitate movement just for the intervention. It is a recommendation that future peer-intervention evaluation studies and developers of such schemes take a similar approach, working closely with key stakeholders and prison senior managers to ensure that the intervention can be delivered within the prison regime, and with the existing resources available within the prisons.

Nevertheless, there were some logistical problems encountered which impacted upon the successful delivery of the peer-led intervention, in that certain prison specific factors interfered with attendance to the intervention sessions. While intervention attendance was overall quite good, with 61% of sessions attended and participants attending a median of four sessions, there were frequent

occurrences of participants missing sessions due to logistical factors. Such factors included participants being transferred or released prior to completion of the intervention, security concerns precluding participant attendance or the intervention clashing with participants' other scheduled appointments/activities (i.e. Court appearances, visits etc.). These logistical barriers mirror those reported in the existing literature, with both Grinstead et al. (1999) and Collica (2002) reporting these to have impeded attendance to peer-led HIV intervention sessions in prisons in the USA.

Prisoner transfer or release prior to intervention completion could be mitigated in a future trial through only allowing those with a release date extending beyond the intervention completion date to participate, and placing holds on participants to prevent them from being transferred before the intervention is complete. Although this feasibility study did incorporate specific inclusion and exclusion criteria to screen out those who would have been released prior to the intervention completion date, it was not possible to place holds on intervention recipients to prevent them from being transferred. This was primarily due to the population pressures experienced by the two prison sites and the focus on progressing prisoners through their prison sentence. While these factors influencing the ability to place holds on prisoners are unlikely to dissipate, for a future trial, there is the potential to negotiate with prison senior managers regarding the possibility of placing a *limited* hold on intervention recipients, as guidelines for prison governor's caution against the transferring of prisoners when this is likely to interfere with their participation in treatment programmes (HM Government, 2005).

The phase one study identified that both prisoners and staff were cautious about the peer-led intervention being open to certain abuses, such as to acquire smoking cessation medication to illicitly trade, to obtain extra time out of cell, and to traffic illicit items around the prison establishment. Indeed, these concerns replicate some of those expressed about other prison-based peer-led schemes explored by previous studies, with the existing literature making frequent reference to staff members in particular expressing concern around such initiatives being abused to traffic drugs, pass messages, obtain extra time out of cell and being used as a social opportunity (Davies, 1994; Hall and Gabor, 2004;

Magee and Foster, 2011; Snow, 2002; Woodall et al., 2015a). While it is understandable that these are valid concerns given the focus on order and security in prisons, there was no evidence that any of these concerns materialised during the delivery of the intervention during phase two. This is not to say that a future definitive study would be immune to such abuses, as previous studies into existing peer-schemes in English and Welsh prisons have documented the occurrence of such abuses, albeit very infrequently, primarily in the form of peer-workers using the freedom of their role to traffic illicit items around establishments (Jaffe, 2012b; Magee and Foster, 2011). In light of this, researchers and designers of prison-based peer-led interventions should be aware of the potential abuses of these schemes, and where possible should incorporate measures to reduce the possibility of these occurring given their potential to limit the credibility of the intervention.

This study identified some measures that may mitigate against potential abuses of peer-led schemes. The first is the security vetting of peer-workers to ensure that there is no intelligence to suggest that they may be open to abuse of the position. This was consistently recommended by participants during phase one and appears to be standard practice in the recruitment of prison-based peer-workers both in- and outside of the UK (Bailey and Kerlin, 2015; Davies, 1994; Edgar et al., 2011; Magee and Foster, 2011; Ross et al., 2006). The second measure identified was the screening of potential recipients to determine any potential risks they may pose to the peer-group, and to what extent recipients are truly motivated to change their behaviour. Indeed, HMIP (2016c) in their leading report on the use of peer-schemes in English and Welsh prisons acknowledge that in prisons where peer-schemes have been successful, the risk-assessment of potential recipients is one of the factors that has led to such success. The exclusion of recipients based upon the potential risks they may pose is contentious however, begging the question as to how fair or justified is it to withhold an intervention that is freely available to others, purely on the basis of potential risk. Offsetting fairness against risk when making decisions regarding the provision of health interventions is a difficult act to balance within the prison environment, where security and order is strived for.

While this study did identify and subsequently experienced barriers to the delivery of the peer-led intervention, overall this study has demonstrated that it is feasible to implement a peer-led intervention to modify the NCD risk-behaviours of prisoners in the prison environment. Group intervention sessions were scheduled successfully, appropriate peer-workers to deliver the intervention sessions were recruited and trained, and intervention arm participants attended the peer-led group sessions. Nonetheless, the barriers to implementation that were experienced will need to be mitigated against in a future definitive trial, with the preceding discussion identifying possible solutions as to ways in which these may be overcome.

9.2.2 The fidelity of the intervention

This study has demonstrated that prisoner peer-workers are able to deliver a structured peer-led intervention to modify NCD risk-behaviours to their peers in the difficult prison environment, with overall fidelity of delivery at each of the two prison sites reasonably good. The highly structured format of the intervention manual appeared to facilitate fidelity, as the peer-workers rigidly worked their way through the manual to deliver each session as intended. Although fidelity was good overall, some problems were encountered which a full-scale definitive trial would need to take into consideration. One of the main fidelity problems encountered was poor adherence with completing the NCD risk-behaviour diaries on a weekly basis by the intervention-arm participants, which meant that a number of components were only partially delivered due to their reliance on diary reflection. To promote full delivery of these components, a definitive trial would either need to refine the components through removing the diary completion aspect, or instead generate ways of promoting compliance with diary completion.

Another fidelity aspect that a future trial would need to take into consideration would be negativity towards engaging with intervention components that recipients may perceive as less amenable to address than others. For example, the participants in this study were very negative in their engagement with the tasks involving identifying ways of eating healthier and becoming more active in custody, primarily because they felt there was little they could do to overcome the barriers the prison environment poses to achieving these aims. While such negativity had the potential to impact on the fidelity of the peer-led intervention,

as negativity/resistance from recipients can lead to difficulties with intervention deliverers adhering to the intervention protocol (Sanetti et al., 2016), this was not the case for this study. Instead, the peer-workers tackled the negativity of the intervention participants through putting forward their own suggestions, and some of those provided in the intervention manual, to mitigate participants' negativity towards engaging in the tasks. These suggestions put forward by the peer-workers facilitated group discussion and overall delivery of the intended components. It is recommended that as part of a future definitive trial, considerable efforts are spent training prisoner peer-workers of the potential negativity or resistance that may be expressed by participants, and the best ways to respond to such negativity; through doing so, fidelity may be enhanced.

9.2.3 The acceptability of the intervention

Previous studies exploring the use of peer-led health schemes with criminal justice populations in- and outside of the UK have consistently documented the many perceived benefits these types of intervention have in comparison to staff-led initiatives. These include perceptions among peer-workers and their recipients that peers are more relatable (Portillo et al., 2017; Syed and Blanchette, 2000a; Syed and Blanchette, 2000b), have a greater understanding (Magee and Foster, 2011; Snow, 2002), are more trust-worthy (Boyce et al., 2009; Syed and Blanchette, 2000a), are more approachable (Danks and Bradley, 2018; Magee and Foster, 2011) and are more accessible and flexible than staff (Danks and Bradley, 2018; Magee and Foster, 2011; South et al., 2014; Syed and Blanchette, 2000b). The findings from this PhD study strengthen these existing findings.

Across both phases, the good accessibility of peer-workers and the enhanced understanding and trustworthiness that peers promote were consistently mentioned, as was the perception that prisoner peer-workers who have changed their behaviour can act as good role models for prisoners to look up to. As acknowledged by Buck (2017), this role-modelling is based on the premise that peers who have changed their behaviour in a positive direction can provide inspiration and hope for others, and in so doing motivate others to change their behaviour. It also has direct connotations with Social Learning Theory (Bandura, 1971), discussed in the Literature Review Chapter, which posits that recipients

are likely to mimic behaviours displayed by individuals who are perceived by recipients as credible role-models, with credibility likely to be enhanced if the model shares similar characteristics and experiences to the recipients.

The finding of this study that many of those that received the peer-led intervention would recommend the intervention to other prisoners wanting to modify their NCD risk-behaviours, and would be willing to receive the peer-led intervention again, are very similar to those reported in other studies where prisoner peers have been utilised in custodial settings to support healthy lifestyle changes (Bailey and Kerlin, 2015; Brooker and Sirdifield, 2007). Thus taken together, these studies confirm that the adoption of peer-schemes to encourage healthy lifestyle behaviour change is an acceptable form of delivery to prisoner populations in England and Wales.

Another important aspect that this study highlighted were the therapeutic benefits of group types of intervention, with their ability to foster encouragement, support and learning opportunities among like-minded recipients highlighted across both phases. These therapeutic benefits have also been documented by McVay et al. (2018) and McMahon et al. (2016) in their respective explorations of weight loss interventions in the community. The participants in both of these studies highlighted the importance of group cohesion in the behaviour change process, due to their ability to generate encouragement and learning opportunities among the group. Based on the results of existing literature and from this study, it is recommended that the primary content of the peer-led intervention that is delivered in a future definitive study continues to be delivered via a group format. However, this study revealed that additional one-to-one support from the peer-workers should also be made available for those recipients requiring extra support, and those not comfortable with sharing information in group settings.

While the specific components of the peer-led intervention, such as the group setting, the leading of the groups by prisoner peers and provision of health information were deemed acceptable, this study demonstrated a clear message that behavioural support through the peer-led intervention alone would not be enough to aid in the encouragement of smoking cessation. This study has confirmed that smoking cessation medications provided alongside the behavioural support provided by the peer-led intervention would greatly enhance

the success of prisoners wanting to cease their smoking behaviour. The apparent key role of smoking cessation medications alongside the behavioural support provided by the peer-led intervention is understandable, particularly in light of recent evidence highlighting the superior success rates in quit attempts among those provided with a combination of medication and behavioural support versus behavioural support alone (Stead et al., 2016). Key smoking cessation guidelines now advocate the use of both medications *and* behavioural support, as opposed to either form of support alone (Public Health England, 2017; NCSCT, 2018). In light of these study findings, the evidence base, and best practice guidelines, it is recommended that a future definitive trial should ensure the availability of smoking cessation medications alongside the peer-led behavioural support intervention. Importantly, this study has also confirmed that the provision of such medications needs to be consistent.

9.2.4 Changes required to better support behaviour modification

9.2.4.1 Changes to the prison environment

Michie et al. (2011) in their highly cited COM-B model of behaviour emphasise the important role that opportunity has on influencing behaviour. Specifically, a given behaviour, such as eating healthily, is more likely to occur if individuals are presented with the necessary physical and social opportunities to engage in the desired behaviour. For instance, it is unlikely that individuals will engage in healthy eating behaviours unless they are presented with the physical and social opportunities to engage in this behaviour, for example through the provision of healthy foods and support from their peers to eat healthily.

This study consistently highlighted the problems the prison environment poses with regards to a lack of provision of physical and social opportunities for prisoners to change their NCD risk-behaviours, particularly with regards to physical opportunities. For smoking cessation, over both phases, smoking being used as a valuable coping mechanism to deal with the boredom and stress of prison life, and the inability to escape exposure to smoking, were frequently identified as barriers to smoking cessation. These findings replicate those found by other studies conducted with prisoner populations in- and outside of the UK

(Condon et al., 2008; Department of Health and Prison Health Service, 2003; Harner and Riley, 2013; Richmond et al., 2009; Woodall and Tattersfield, 2017).

With regards to healthy eating, there was a clear message that the pre-determined diet provided by the Prison Service severely impedes prisoners' ability to engage in healthy eating behaviours. During the qualitative study, the prisoners were condemning about the food provided, describing it as insufficient in quantity, unhealthy, being of poor quality, very much driven by carbohydrates and severely lacking in choice. These findings are not unique to this study and confirm the findings from previous literature exploring prisoner perceptions of the diet provided in English and Welsh prisons (Condon et al., 2008; HMIP, 2016b; Plugge et al., 2006; Williams, 2017). Moreover, during the quantitative feasibility study, at baseline and over the first two follow-up periods when most of the participants were still in prison, both the intervention and control arm cited a lack of choice as being the greatest barrier to them eating healthily.

Previous studies undertaken in English and Welsh prisons have documented the negative impact of the prison environment on prisoners' ability to exercise, with prisoners reporting limited access to the prison gymnasium (Condon et al., 2008; Durcan, 2008) and long periods spent sedentary as a result of being 'banged up' (de Viggiani, 2007) as negating factors. The findings of this PhD study support these earlier findings, as across both phases, environmental factors such as a lack of exercise facilities, long periods spent locked behind cell door and limited access to the prison gymnasium were reported as physical activity barriers. Regarding the limited access to the gymnasium, it was evident that this was further compounded for some subgroups of prisoners, such as non-wing workers, basic regime prisoners, vulnerable prisoners and those suffering from poor health. Indeed, some of these factors have been found to have led to reduced gymnasium access amongst prisoners in other English and Welsh prisons, with findings that less access has been granted to those assigned vulnerable prisoner status (National Audit Office, 2006; Durcan, 2008) and for those with lower levels of privileges through the prison IEP scheme (National Audit Office, 2006).

It is evident from the above discussion that NCD risk-behaviour change may be highly difficult for prisoners to practise in light of the limited physical and social opportunities for them to change their behaviour while in prison. The implication

of this for a future definitive trial exploring the effectiveness of a peer-led intervention, or any intervention hoping to modify the NCD risk-behaviours of prisoners, is that regardless of the support being provided by the intervention, prisoners may significantly struggle to change their behaviour due to the barriers imposed by the prison environment. Thus it is recommended that changes are made to the prison environment to better support prisoners to lead healthier lifestyles. It must be acknowledged that since the conduct of this research, the Prison Service have implemented a service wide smoking ban, which was introduced gradually over the latter half of 2017, and therefore to an extent the physical and social opportunities for prisoners to engage in smoking behaviour have been removed. Given its relative recent introduction however, it is too early to gauge how successful this policy initiative has been in reducing smoking behaviour, and therefore future research evaluating this is warranted.

In contrast, as far as the researcher is aware, there have been no prison-wide initiatives introduced to overcome the physical barriers of lack of physical activity opportunities and lack of healthy diet choices. This is still required to support prisoners to change their activity and dietary behaviour in a positive direction. However, this study demonstrated that both prisoners and staff were very doubtful of the Prison Service's ability to do this, citing budgetary and capacity constraints as significant negating factors to providing prisoners with better and healthier food, and more access to the prison gymnasium.

Indeed, these concerns are well founded. HMIP have documented the steady decrease in the budget allocated to cater for prisoner meals, decreasing from £59.6 million in 2012-13, to £54.1 million in 2014-15 (HMIP, 2016b). The impact of these declining budgets may inhibit the provision of healthy choices, as often it is ready-made, convenience foods such as pies, pasties and burgers that are the most cost-effective means of providing sustenance to incarcerated individuals (Edwards, 2007b). Moreover, with regards to physical activity, HMIP reports from 2009 to present have documented that as a result of staff shortages and the increasing occurrence of prison gymnasium officers being redeployed to undertake other duties in the prison, prisoners are being increasingly afforded less opportunities to attend the prison gymnasium on a weekly basis (HMIP, 2009; 2010; 2012; 2014; 2015; 2016a). Greater funding is required to increase

prison officer numbers and to provide healthier food for prisoners to choose, in order to provide prisoners with the necessary physical opportunities to enable behaviour modification in the area of diet and physical activity.

9.2.4.2 Refinements to the intervention

Although participants appeared to value the intervention and found the aspect of peer-delivery acceptable, this study did demonstrate that prior to the commencement of a future definitive trial, slight refinements to improve the intervention would be required. Along with refining the behaviour diary components, consideration should be given to delivering the intervention over a longer period of time. As highlighted in Chapter Eight, there was a view by participants that six-weeks was not long enough to fully support their efforts in modifying their NCD risk-behaviours. Indeed, findings from the existing literature pertaining to physical activity and diet support this view, with a recent systematic review finding evidence that longer duration interventions (> 24 weeks) are more likely to promote sustained dietary and physical activity behaviour change than shorter interventions (< 24 weeks) (Fjeldsoe et al., 2011). In contrast, the same has not been found for smoking cessation, with a recent Cochrane review finding no evidence that the number or duration of smoking cessation support sessions leads to greater treatment benefits (Stead et al., 2016).

Nonetheless, if the decision was taken to increase the duration of the intervention for a definitive trial, the trial designers would need to be mindful that in doing so, there could be an increased risk of attrition of participants prior to intervention completion, particularly given this study did find that numerous intervention sessions were not attended due to the participants being transferred or released from prison prior to completing the intervention. Moreover, it is questionable whether the prison environment would be able to facilitate increasing the duration of the sessions, due to the Prison Service's pre-occupation with ensuring prisoners are attending work or education. Until the peer-led intervention could be classified as meaningful and purposeful activity, such as work, arranging the intervention around work and/or education is likely to remain a barrier to increasing the duration of the peer-led intervention.

9.2.5 The potential efficacy of the intervention

It is important to stress that the main aim of the study was to explore the feasibility of undertaking a definitive trial exploring the effectiveness of a peer-led intervention in modifying the NCD risk-behaviours of prisoners, rather than exploring the actual effectiveness of the intervention. Nonetheless, some descriptive and inferential analyses were undertaken on the outcome measures to explore the potential efficacy of the intervention. However, given that this was a feasibility study and thus not powered to detect differences between groups, it must be highlighted that where inferential analysis was undertaken, it is possible that any actual differences between study arms on the outcome measures may have not reached statistical significance due to a lack of power.

The results of the multi-level models exploring engagement with the NCD risk-behaviours over the trial period showed some trends towards a treatment benefit, with intervention arm participants at reduced odds of smoking and adding salt to their food, and at increased odds of consuming five or more portions of fruit and vegetables per day than the control group. In contrast, with regards to physical activity, the results of the multi-level model favoured the control group, with control participants at increased odds of engaging in 150 minutes or more of physical activity per week compared to the intervention participants. Only the multi-level model exploring smoking behaviour reached statistical significance with the alpha set at less than 0.05. Due to the small sample size and the resultant lack of power, the trends discussed above must be interpreted with caution. If the decision is taken to proceed with a full-scale definitive trial to explore the effectiveness of the peer-led intervention, only then can the impact of the intervention be fully evaluated and conclusions be drawn regarding the effectiveness of the peer-led intervention in modifying prisoners' NCD risk-behaviours. It is recommended that if a future definitive study is proceeded with, the research team for such a trial should include a biostatistician with significant experience in conducting multi-level modelling and who would be able to determine the sample size for an appropriately powered study, given the highly complex nature of such a calculation (Scherbaum and Ferreter, 2009).

While previous research provides evidence that prison-based peer-educational interventions can enhance prisoners' knowledge on the topic area of interest

(Collica, 2002; Dolan et al., 2004; Ross et al., 2006; Schlapman and Cass, 2000; Scott et al., 2004; Sifunda et al., 2008; Vaz et al., 1996), this study provides a mixed picture. For smoking, knowledge about the effects of first hand and second hand smoking on adults was very good in both arms across the trial period. This was not the case for knowledge about the effects of second hand smoke on children however, with baseline knowledge lower than that for the other two domains. Intervention arm participants' knowledge did appear to improve over the follow-up though, suggesting that the intervention may have impacted upon their knowledge on this topic.

Regarding the impact of second-hand smoke on children, where questions were answered incorrectly, this was mostly pertaining to the impact of smoking on sudden-infant death syndrome and ear infections. This suggests that although prisoners may be aware of the risks second hand smoke poses with regards to increasing children's' risks of developing obvious conditions, such as respiratory related conditions and cancer, they may be unaware of these less obvious risks. These findings are broadly in line with the knowledge of the general public. Lader (2009) found that much higher proportions of the general public were aware that smoking around children may increase their risk of developing respiratory conditions, such as chest infections (92%) and asthma (86%), but far less aware of risks such as sudden-infant death syndrome (58%) and ear infections (35%). These findings suggest that any smoking cessation intervention delivered to prisoners should look to highlight the less obvious and less publicised risks of second-hand smoking on children, particularly in light of the fact that many male and female prisoners are parents to dependent children (Epstein, 2014; Families Need Fathers, 2014), and therefore increasing their awareness regarding these risks could be a crucial incentive to cease their smoking behaviour.

Knowledge about the recommended guideline for the daily intake of fruit and vegetables among the phase two participants was initially considerably lower than that in the general population, appearing to support the suggestion of the phase one staff participants that prisoners have a basic lack of awareness about what constitutes a healthy diet. However, by the end of the intervention follow up period, the percentage of respondents knowing the recommendation had increased, suggesting that the intervention may have efficacy in improving diet

knowledge. Appleton et al. (2017) reported awareness of the guideline in 96.8% of a representative sample of the UK general population. By the end of this prison study, the percentage of participants knowing the guideline had increased across all participants, with an increase from 65% to 79% in the intervention group, and an increase from 62.5% to 79.2% in the control group. It is unclear from this study what led to the increase in knowledge among the control arm, however it is possible that contamination, which is discussed later in this chapter, may be a potential explanation. There is a possibility that after receiving education about the guidelines, the intervention arm participants may have then shared this information to other prisoners outside of the intervention, including the control participants. Moreover, the peer-workers themselves may have shared information regarding these guidelines to the control participants. Indeed, a number of control participants did in fact report to being told information from the group sessions, with some also reporting to speaking with the peer-workers about modifying their own smoking, dietary and physical activity behaviour.

Knowledge of the governmental recommendation that adults should aim to partake in 150 minutes of moderate physical activity per week was very poor in all participants at the commencement of the phase two study, with only 5% able to recall this recommendation, and most over-estimating the number of minutes of activity that should be undertaken per week. This again supports the perception of staff participants that there is a low level of awareness about healthy lifestyles among prisoner populations. It must be acknowledged that level of knowledge about the recommendation among the general population is generally lacking though, with both Knox et al. (2013) and Knox et al. (2015) finding only 18% and 15% of adults sampled from the UK general population respectively being able to correctly recall the recommendation. While in this study the intervention participants did report that their knowledge had improved post-peer-led-intervention, their estimation of the recommended exercise duration contradicted this, as over all of the follow-up periods, the majority over-estimated the 150 minute recommendation. This finding has implications, as this over-estimation of the recommended time for physical activity may lead prisoners to view the recommendation as unattainable for them to achieve in practice, which could inhibit their motivation to engage in physical activity in the first place (Knox et al.,

2015). Although the peer-led intervention did incorporate components covering the physical activity guidelines, it is clear from this study that the intervention needs to be refined to enhance assimilation of the recommendation.

9.3 The feasibility of the trial procedures

In addition to exploring the feasibility of the intervention itself and issues pertaining to implementation, this study explored factors relating to the feasibility of the trial procedures, including; recruitment and retention, randomisation acceptability, completion of data collection tools and levels of contamination to the control group.

9.3.1 Recruitment and retention

The required number of participants for this feasibility trial (n=80) were recruited over a period of six weeks. Of those screened for participation, most met the inclusion criteria and were recruited into the study. Of those that were excluded, all were ineligible due to the fact that they would not be remaining in the prison for the full duration of the intervention delivery. A future trial would need to keep this as a specific exclusion criteria to ensure that all intervention arm recipients receive the peer-led intervention in full as intended.

Retention of participants over the first two follow-up periods was good, with 86% of participants successfully retained at each of these follow-up periods. However, retention by the final follow-up time-point was more disappointing, with only 53 of the 80 participants (66%) successfully retained. These retention figures are comparable to the international studies that have followed-up participant recipients of prison-based peer-led health interventions, where successful retention over follow-up has ranged from 42.5% to 85% (Collica, 2002; Grinstead et al., 1999; Martin et al., 2008). They also compare more favourably to a recent prison-based randomised controlled feasibility trial conducted in the UK by Lennox et al. (2018), where successful retention at 1-month and 3-month follow-up was 73% and 47% respectively. However, this was a mental health intervention utilising professional delivery, and therefore not directly applicable to the current research.

Retention problems over follow-up were most often encountered when participants had either been released from custody back into the community or had been transferred to another prison establishment that was not one of the research sites. Again, this finding is not unique to this study, having been found to have impeded the successful follow-up of participants in studies that have explored the outcomes of peer-led health initiatives (Chen, 2006; Ross et al., 2006; Walrath, 2001) and of other professionally-led health services in custody (Richmond et al., 2006; Yoon et al., 2017). In this study, in cases where participants had been released, some were not followed-up due to an inability of the researcher to contact the participants, while some actively made the decision to withdraw their participation upon successful contact being made. Regarding the latter, this could potentially be mitigated in a future definitive trial through reimbursing released participants for their time in the completion of follow-up data collection measures, with some studies indeed taking this approach to combat attrition among released prisoner participants (Lennox et al., 2018).

Where prisoners had been transferred, the researcher endeavoured to work with the healthcare team at the transferring prison establishment to ensure completion of data collection measures. However, this was not always possible. While some of the transferring prisons agreed to facilitate data completion measures by transferred prisoners, some did not, citing that short-staffing impeded their ability to aid the researcher. Again, there is potential for a future definitive trial to overcome this barrier, through including service-support costs into a funding bid, which could then be used to reimburse those health organisations at non-participating prison research sites. While this study did experience some attrition, overall, the study did demonstrate that it is feasible to recruit and retain participants in a randomised controlled trial study, albeit with a relatively small target sample. However, a future trial should take the necessary steps to enhance the successful follow-up of those participants that are released from custody or transferred to another prison over the trial period.

9.3.2 Randomisation acceptability

Of the previous randomised controlled trials of peer-led health initiatives in prison (Grinstead et al., 1997; Grinstead et al., 1999; Martin et al., 2008; Sifunda et al., 2008), none have explored levels of randomisation acceptability. This is a unique feature of this PhD study. This feasibility study encountered instances of prospective prisoner participants refusing to participate, control participants verbally expressing their disappointment at their random allocation, and enrolled participants randomised to the control arm subsequently withdrawing their participation over the follow-up periods. This was directly associated with a perception that the use of randomisation was unacceptable. Some of these participants that deemed randomisation to be unacceptable anecdotally reported to the researcher that their discontent at the randomisation process stemmed from their perception that there was little else being provided in the prison to support them live a healthier lifestyle, and therefore they felt randomisation to the control arm would be, or was, denying them a rare opportunity to potentially change their smoking, diet and physical activity behaviour. While some authors suggest that randomisation acceptability, or lack of it, can be mitigated through providing the control participants with the intervention once the research has been completed (Kerr et al., 2010), it is unlikely that a future definitive study would be able to take such an approach. Such an approach would be very difficult to incorporate into a future trial due to the length of the follow-up period and the likelihood that the control participants would no longer be resident at the study prisons once the research evaluation is complete. Thus it is recommended that when determining the sample size for a definitive study, potential attrition due to the unacceptability of the randomisation process should be factored in to the sample size calculation.

9.3.3 Contamination to the control group

Contamination is the process by which participants in the control arm inadvertently receive aspects of an intervention only intended to be received by the intervention arm participants, and can be a threat to randomised controlled trials exploring the effectiveness of health interventions, particularly those where the intervention contains educational aspects (Keogh-Brown et al., 2007). Where contamination does occur, it reduces the estimate of an interventions

effectiveness, and therefore can lead to type II errors whereby the intervention is incorrectly deemed as ineffective (Torgerson, 2001). The potential for contamination is particularly pertinent in the prison context, as it can be amplified in environments where the intervention and control participants work, live or interact closely together (Howe et al., 2007), all of which are understandably highly relevant to prison establishments within England and Wales. For example, in most prison establishments in England and Wales, prisoners are housed together, sometimes sharing cells with one another, they attend the same workshops and they socialise with each other. Given the threat that contamination may pose to a full-scale definitive trial, and its potential to occur as the peer-led intervention developed contained educational aspects, one of the main aims of the phase two feasibility study was to explore levels of contamination.

There has been a distinct lack of reporting of contamination in previous studies that have explored the use of peer-led health interventions in prisons. Only one study has been identified, and even then Sifunda et al. (2008) only acknowledge the potential of contamination as a limitation of the research, as opposed to directly quantifying the impact of contamination on the study results. This study has confirmed that contamination is likely when adopting an individual randomised controlled design to explore the impact of peer-led health initiatives in prison. In this study, not only did intervention arm participants report sharing information and materials with others outside of the group sessions, but control participants also reported directly hearing health information from the group sessions and speaking with the peer-workers themselves with regards to their own attempts to address their smoking, diet and/or physical activity behaviour.

Based on this current study, a future definitive trial should incorporate design choices to mitigate against contamination. This could be done in one of two ways; firstly through adopting a different form of randomised design, or secondly, if continuing with an individual randomised design, introducing appropriate methods to reduce the impact of the contamination. The first could be through adopting a cluster randomised controlled design where the level of randomisation is conducted at the level of the prison establishment, as opposed to an individually randomised design where the level of randomisation is conducted at the prisoner level. Such cluster randomised designs have been suggested by

experts to be an appropriate design to use in instances where participants in a trial are likely to be in close proximity to one another, to avoid the potential sharing of information between them (Keogh-Brown et al., 2007).

However, cluster randomised designs are not without their problems, as they are prone to recruitment bias and often require much larger sample sizes than individually randomised designs, thus increasing the costs of the trial (Torgerson, 2001), and increasing the risk of not recruiting the target sample size. Moreover, the risk of contamination is not eliminated with cluster randomised designs, as there is potential for a control cluster to be contaminated (Keogh-Brown et al., 2007). For example, if a prisoner was transferred from an intervention prison to a control prison, there is potential that they will share information regarding the intervention with the participants at the control site, meaning the control prison can become contaminated. Given the high occurrence of prisoners being transferred between different prison establishments, there is therefore a likelihood that control prisons could be contaminated if a cluster randomised design was adopted for a definitive trial. In instances such as these where there is potential for entire clusters to be contaminated, individual randomised designs may be more appropriate (Keogh-Brown et al., 2007).

Although it is apparent from the findings of this study that contamination is likely when using individually randomised designs, appropriate measures can be taken to mitigate against the impact on study results. One way is to increase the sample size for studies employing individually randomised designs (Torgerson, 2001). The resultant increase in power from the larger sample size can mitigate against the contamination, particularly in instances where contamination is ≤30%, which in this feasibility study it was. The resultant increase in sample size is still likely to be much lower than that required for a clustered design. Secondly, where contamination has been measured and quantified, with the control participants who have been contaminated known to the research team, a Complier Average Causal Effect (CACE) analysis can be undertaken to reduce the bias introduced from contamination (Keogh-Brown et al., 2007). With all of the above in mind, it is the recommendation of the researcher that a future definitive trial employ an individually randomised design, building into the study the appropriate mitigation measures discussed above to reduce the likelihood of type II errors occurring.

9.3.4 Completion of measures

The completion of the survey-related data by participants at each respective time-point was high over all four of the study periods. Successful capturing of the CO levels of participants was very high at baseline, but this was not the same for baseline measurements of height and weight, and this reflected a lack of facilities within the prisons to capture this data. Although the researcher had access to a portable CO monitor throughout the study period that enabled recording of CO data, for height and weight measurements, the researcher had to rely on the facilities within the healthcare treatment rooms which were not always accessible. For example, there were occasions when the treatments rooms were being used by the nursing staff, and thus the researcher had to use another meeting room lacking height and weight measurement facilities. There were other instances where the researcher had to conduct the data collection during participants' time at work in a private room contained in the prison workshop, which again lacked the tools to measure their height and weight. In these cases, the researcher endeavoured to capture this data at a later time, but again this was not always possible.

The researcher also encountered considerable difficulty in obtaining CO, weight, and BMI measurements over the later follow-up time points, and this was primarily due to participants no longer being resident at either of the study sites, either as a result of prison release or transfer. As these participants were no longer in either of the study prisons, the follow-up data collection with these participants was obtained by the researcher over the telephone or via a member of healthcare staff at the prison establishment where the participant had been transferred. As a result, this made it very difficult for the researcher to collect CO, weight and BMI readings from these participants. A future definitive trial would potentially encounter similar challenges.

In contrast, this study demonstrated that self-reported NCD risk-behaviour prevalence through the use of a questionnaire can be captured over an extensive period, and thus such a tool to measure NCD behaviours in a definitive trial is recommended. The researcher does acknowledge the potential of bias with self-report measures to capture prevalence data. However, the results of this study that the agreement between participants' self-reported and measured CO was

fair to good, with very few participants in this study self-reporting to have stopped smoking when their measured CO level suggested otherwise, suggest that participants are likely to be truthful regarding their self-reported smoking behaviour. However, it is unclear from this study the accuracy of participants' self-reported dietary and physical activity behaviour, as unfortunately the research was unable to incorporate more objective measures to capture the prevalence of these behaviours. Thus it is not clear whether or not participants' self-reported dietary and physical activity behaviour in this study were indeed accurate.

9.4 Is a definitive trial the next step?

This research has demonstrated that a full-scale definitive trial exploring the effectiveness of a peer-led intervention to modify the NCD risk-behaviours of prisoners is feasible; that is, peer-workers can be recruited and trained, the intervention can be delivered in a sometimes difficult prison environment, and prisoner participants can be retained for data collection over a three-month follow-up period. A fairly large sample size would be required to mitigate against contamination and attrition over the follow-up periods. Attrition could also be mitigated through introducing other appropriate measures, such as reimbursing participants for their time in completing data collection tools over follow-up, and reimbursing healthcare organisations at non-participating research sites for their co-operation in instances where participants have been transferred.

It is recommended that upon implementing minor amendments to the intervention in light of some of the problems encountered, a full-scale definitive trial should be proceeded with. This is because randomised controlled trials are recognised as the gold standard in demonstrating the effectiveness of healthcare interventions (Eccles et al., 2003; Craig et al., 2008; Crispino, 2013), and therefore such a trial is needed to address the gap in the existing evidence base as to whether or not a peer-led intervention can be effective in modifying prisoners' NCD risk-behaviours. If found to be effective in encouraging NCD risk-behaviour modification, evidence obtained through a well-constructed randomised controlled trial would also arguably be the most persuasive in convincing commissioners to fund such an intervention, as within the UK, there is a distinct focus on funding only those interventions for which there is an appropriate

evidence base (NICE, 2014). As randomised controlled trials are the gold standard, it is reasonable to assume that greater consideration would be given to evidence from research studies adopting such a design.

9.5 Strengths and limitations of the research

This section of the chapter highlights the strengths and limitations of this PhD research. It begins with a discussion of the strengths and limitations of the overall study, before highlighting the main strengths and weaknesses of each of the individual study phases. One of the main strengths of this PhD study is that it is the first that has explored the feasibility of undertaking a randomised controlled trial to explore the effectiveness of a peer-led intervention in prison to modify the NCD risk-behaviour of prisoners, and thus this study has taken the first steps required to address the important gap in current knowledge and evidence base that was identified in the Literature Review Chapter. Now that this study has established that a definitive trial is feasible, and with some modifications, a full-scale definitive trial can be initiated to establish the effectiveness of a peer-led intervention in modifying the NCD risk-behaviours of prisoners.

One of the main limitations of this research was that it was conducted in one Category B male remand prison and one Category C male training prison, and thus it is not clear whether the findings of this study are transferable to other different types of prison establishment in England and Wales, such as higher security prisons, young offender institutes (YOIs) or female prisons. Indeed, it is likely that very different findings may have been observed had this study been undertaken in these different types of prison. For instance, in Category A prisons, where the security level is much higher, it is questionable whether or not, due to the increased security, the implementation of a peer-led intervention would even be feasible. On the other hand however, due to these prisons generally being less transient than the types of prison that were the setting for this PhD study, it is arguable that peer-led interventions in Category A prisons would be less likely to suffer from the attrition of intervention recipients during intervention delivery, or during the study follow-up period, as a result of them being transferred to another prison or unexpectedly released.

The strengths and limitations of each individual phase of the research are discussed in the following subsections.

9.5.1 Strengths and limitations of the phase one qualitative study

One of the main strengths of the phase one qualitative study were the processes built in by the researcher to enhance the rigour and trustworthiness of the study. Explicit reference was made to the particular data collection and analysis methods chosen, along with the rationale behind the choice of methods. Additionally, checking processes were put in place throughout the phase one data analysis, with members of the researcher's supervisory team conducting independent checks of the initial coding process and of the themes generated by the researcher. Finally, throughout this thesis, rich and thick descriptions of the themes generated by the researcher, along with verbatim quotes to support each theme, have been provided to allow other researchers to judge for themselves to what extent the findings accurately reflect the accounts of participants. Taken together, these methods have added to the credibility, transferability, dependability and confirmability of the conduct and findings of the phase one study.

A second strength of the study was the sampling of both prisoner and staff participants to the qualitative study. This form of perspective triangulation enabled the researcher to explore more fully the context of the NCD risk-behaviours in the prison environment, ensuring balanced views were captured. Moreover, as the views of both prisoner and staff participants were captured regarding the specific implementation of a peer-led intervention to modify prisoners' NCD risk-behaviours, this not only made it more likely that the resulting peer-led intervention developed by the research team would be accepted by the prisoner participants, but also more acceptable among the wider staff workforce who would clearly need to be on board with the scheme to ensure its successful implementation in the prison environment.

It must be acknowledged that the qualitative study also had a number of limitations which must be considered when interpreting the findings and overall conclusions made. Although the participants sampled for the prisoner focus groups were selected purposefully to ensure representation from different wings,

ages and ethnic backgrounds, there was an element of self-selection in that prisoners must have first voluntarily expressed an interest in participating in the research, before being purposefully selected to participate in the prisoner focus groups by the researcher. This element of self-selection could have had the potential of introducing bias into the study, as the participants who volunteered to participate may have been inherently different from those that did not volunteer to participate. While a valid caveat, any research study could be potentially exposed to such bias, regardless of the sampling strategy employed, as all studies rely upon the voluntary participation and willingness of individuals to participate.

In addition, while the sampling strategy used aimed to ensure representation of prisoners from different ethnic backgrounds through purposively selecting a varied group of prisoners to participate in the focus groups from a pool of those that had volunteered their participation, it must be acknowledged that very few prisoners from Black, Asian and Minority Ethnic (BAME) backgrounds volunteered their participation to begin with, meaning those from BAME backgrounds were under-represented in the phase one study. As a result, the transferability of the phase one findings to BAME prisoners may be questionable. Future studies exploring prisoners' views towards a peer-led intervention to modify the NCD risk-behaviours of prisoners may thus benefit from taking a different approach to sampling and recruitment of participants, to ensure those from BAME backgrounds are adequately represented.

A further limitation concerns the size of the sample for the phase one study. The overarching concept guiding the sampling for the phase one qualitative study was data saturation, with recruitment halted once it was felt that saturation had been reached. As discussed in the Phase One Methods Chapter, the researcher felt that data saturation had been reached after 3 prisoner focus groups and 10 staff interviews had been conducted, with an additional 2 staff interviews conducted in addition to this to ensure that no novel codes were indeed emerging with subsequent sampling. While saturation was the guiding principle, which as discussed above was felt to have been reached after 3 focus groups and 10 interviews, it is possible that due to the relatively small sample size of the phase one study, that not all themes may have been fully saturated.

A final limitation of the phase one qualitative study was the researcher's close proximity to the research sites and the potential influence this may have had on the responses of participants. As previously mentioned in the Introduction Chapter, the researcher had been working at the two prison sites as part of the research team for a number of years prior to the commencement of this PhD study. As a result, the researcher was known as a recognisable member of staff both to the prisoners and to most of the staff members, and this degree of familiarity could have potentially influenced participants' responses to the questions asked by the researcher. For example, it may have prevented participants from sharing certain thoughts and feelings with the researcher. Although such familiarisation could have negatively influenced participants responses in this way, it could have also had the opposite effect and made participants feel more comfortable in sharing their true thoughts and feelings with the researcher.

9.5.2 Strengths and limitations of the phase two randomised controlled feasibility study

One of the main strengths of the phase two study was the use of patient and public involvement (PPI) in the development and testing of the materials to be used throughout phase two. The content of the intervention manual detailing how peers-workers had to deliver the six-week peer-led intervention was checked by a small prisoner group to check for the appropriateness of the content of the intervention; this was additionally checked by an expert panel consisting of the researcher's supervisory team and members of healthcare and prison staff within the prisons. A separate prisoner group checked the participant information sheet and consent form for appropriateness and clarity, which were amended in light of the group's comments. Testing of the questionnaire used to collect data from participants regarding their NCD risk-behaviour prevalence, knowledge and attitudes was also undertaken. This involved an expert panel checking the face validity of the tool, followed by the tool being piloted with prisoners at each of the two prison sites.

One of the main limitations of the phase two study was that the researcher involved in the data collection for the phase two study was also involved in the development and delivery of the intervention, and thus this may have an

introduced an element of bias that would not have been present had the intervention development/delivery aspect been kept entirely separate from the data collection process. For example, participants may have responded to the intervention acceptability or the main questionnaire assessing prevalence, knowledge and attitudes in a certain way, based upon feelings of obligation to the researcher. While the potential for bias may have been reduced through keeping development/delivery and the feasibility study aspects separate, this was not possible for this small-scale feasibility study. To eliminate this potential bias in a future definitive effectiveness trial, it is recommended that staff involved in the collection of data from participants be independent of those involved in any of the intervention refinement or delivery. Additionally, where possible, staff responsible for data collection should remain blind to the allocation of participants to study arms throughout the period of the trial.

A second limitation was that due to the significant time constraints associated with the mixed methods exploratory sequential design that was used to undertake this PhD research, the researcher was unable to undertake rigorous reliability and validity testing of the unique questionnaire that was developed to measure prisoners' NCD risk-behaviours, knowledge and attitudes. While time allowed for the assessment of face validity and pilot testing of the questionnaire, which was discussed in Chapter 7, other reliability and validation testing, such as test-retest reliability, the assessment of internal consistency and factor analysis, were not undertaken. This was deemed as an acceptable limitation at the outset of the study however, as the primary aim of this PhD research was to assess the feasibility of undertaking a definitive effectiveness trial as opposed to actually exploring the effectiveness of the peer-led intervention in modifying prisoners' NCD risk-behaviour, knowledge and attitudes. However, it is acknowledged that prior to proceeding with a definitive trial, rigorous testing of the questionnaire tool would be required and indeed is planned to take place.

A final limitation concerns the findings pertaining to differences between the study arms in their NCD risk-behaviour prevalence, knowledge and attitudes over the course of the trial period. As discussed in the Phase Two Methods Chapter, one of the secondary aims of the phase two feasibility study was to explore the potential efficacy of the peer-led intervention in modifying prisoners' NCD risk-

behaviour prevalence, knowledge and attitudes through exploration of changing trends between the study arms over the course of the trial period. While this secondary aim was explored by using multi-level models to analyse the prevalence data, and descriptive statistics to analyse the knowledge and attitude data, all of these results should be interpreted with caution, as the study was a feasibility study and was not powered to detect differences between groups. For this reason, definitive conclusions cannot be made from the phase two study results regarding the effectiveness of the peer-led intervention in modifying the smoking, diet and physical activity behaviour of prisoners, nor regarding their knowledge and attitudes towards these areas. Now the key parameters for a full-scale definitive effectiveness trial can be identified based upon the findings of this feasibility study, a future research team can now proceed to undertake a definitive trial to determine the effectiveness of a peer-led intervention in helping prisoners to modify their NCD risk-behaviours.

9.6 Conclusion

The main aims of this PhD were to explore the views of key stake-holders to inform the development of an appropriate peer-led intervention, and then explore the feasibility of undertaking a definitive randomised controlled trial exploring the effectiveness of the peer-led intervention. Chapters 4 through to chapter 9 have detailed how these aims have been achieved.

Phase one identified the many barriers the prison environment poses to prisoners wanting to modify their NCD risk-behaviours, nonetheless, there was a demand for support to aid prisoners lead healthier lifestyles. Both prisoners and staff were supportive of the proposition to develop a peer-led intervention to modify prisoners' NCD risk-behaviours, drawing upon the many benefits these types of intervention possess versus professionally-led schemes. The desirable qualities to look for in a prisoner peer-worker were discussed extensively and included factors such as being a good role model, being trust-worthy and holding a desire to work in the role for altruistic as opposed to self-centred reasons. Participants were vocal regarding the different implementation and logistical issues that would need to be overcome to deliver the intervention in the prison environment, with many of these barriers mirroring those highlighted in the existing literature. The

findings of this phase were instrumental in the development of the peer-led intervention that was delivered during phase two, the design of which was aided by using the detailed intervention development guidance of the Behaviour Change Wheel developed by Michie et al. (2014a).

Phase two demonstrated that a full-scale definitive trial exploring the effectiveness of a peer-led intervention in modifying the NCD risk-behaviours of prisoners is feasible. The intervention was successfully implemented, delivered to intervention arm recipients, and deemed overall acceptable among its intended audience. Potential refinements to the intervention and environmental changes to the prison environment which could better enable behaviour change were identified however. The trial procedures were also feasible, with participants successfully recruited, and willing and able to complete the self-report data collection tools when successfully followed-up. Follow-up over a three-month period was feasible, but a definitive trial could further enhance successful follow-up through reimbursing participants and/or healthcare providers for their time in aiding successful follow-up, particularly over the latter follow-up periods where it is likely that participants may have been released or transferred. A definitive trial would also benefit from over-recruiting to mitigate against potential attrition, and the potential for contamination to the control group to occur. It is recommended that following this feasibility study, a full-scale definitive trial should be proceeded with, with this and other implications for policy, practice and future research discussed in the following section.

9.7 Implications for practice, policy and future research

9.7.1 Practice

- Although this research cannot claim evidence of effectiveness of peer-led interventions in modifying prisoners' NCD risk-behaviours, both the findings of phase one and phase two suggest that delivery of a healthy lifestyles intervention via a peer-format is acceptable to prisoners. Moreover, peer-schemes are thought to promote better engagement. Therefore, it is recommended that consideration be given to utilising

prisoners as peer-workers to support other prisoners in healthy lifestyles behaviour modification.

- The developers of prison-based peer-led schemes should work closely with prison sites in the development of these schemes to counter potential logistical barriers and ensure success of implementation. The benefits of peer-led schemes for staff and the wider prison environment should also be promoted to negate any potential staff resistance.
- The developers of novel prison-based peer-initiatives should incorporate staff into the structure of the intervention to both provide appropriate levels of support to the peer-workers and help maintain the focus of these schemes.
- Prisoner peer-workers should be provided with appropriate training that aims to enhance their knowledge, skills, and understanding of confidentiality principles.
- Recruiters of prisoner peer-workers should take appropriate action to counter the potential for attrition of the peer-workers through taking into account sentence length when recruiting, and putting holds on peers to prevent prison transfer wherever possible.
- New and existing peer-led schemes should manage potentials risks through; recruiting and selecting peers carefully and suitable screening/monitoring of recipients.
- Any smoking cessation interventions in prisons, whether peer or professionally-led, should incorporate pharmaceutical support in addition to behavioural support. Moreover, the provision of the medications should be provided consistently over the course of the intended prescription.

9.7.2 Policy

- The Prison Service should introduce changes to the environment to better support prisoners engage in healthy behaviours while in custody. A service wide smoking ban has recently been introduced which has to an extent reduced the physical and social opportunity for prisoners to engage in smoking behaviour. However, physical opportunities to eat healthily and engage in physical activity are still lacking. Where at all possible, prisoners

should be provided with more opportunities to select healthy diet choices and be more physically active.

- Existing and novel prison-based peer-led schemes should continue to have a strict policy for the selection of peer-workers to ensure the credibility of the intervention, and reduce the potential for the breaking of prison rules and regulations.
- Consideration should be given to the potential for payment of peer-workers, particularly if their workload is high.
- HMPPS should recognise the benefits of improving health to rehabilitation, and thus should be more flexible in allowing prisoners to attend health-focussed interventions during the core-working day when they would usually be required at work or education.

9.7.3 Future research

This research has demonstrated that a full-scale definitive trial exploring the effectiveness of a peer-led intervention to modify NCD risk-behaviours among prisoners is feasible, thus it is recommended that a definitive trial is undertaken for reasons aforementioned. However, such a definitive trial would need to consider the following;

- Mitigation of attrition through; over-recruiting participants, reimbursing released participants for their time over the follow-up period, and the provision of research support costs for co-operating prisons where participants have been transferred to.
- Slight over-recruitment to counter potential contamination. Moreover, levels of contamination should be measured and, if found to have occurred, should be accounted for in the analysis.
- The use of self-report tools to measure behaviour due to the difficulties in collecting the more objective data measures over the follow-up period.
- Given the recent introduction of the Prison Service wide smoking-ban, the questionnaire tool would need to be amended to incorporate the consumption of electronic forms of cigarette, which many prisoners are now using instead of tobacco-based cigarette products.

- The inclusion of a nested qualitative study exploring the impact of the peer-led intervention on the peer-workers. It was beyond the scope of this feasibility study to explore the impact of the intervention on the peer-workers themselves, and thus it is not clear whether or not peer-workers delivering an NCD-focussed intervention experience similar reported benefits to those delivering HIV/BBV- or emotional-support focussed interventions identified in the existing literature.

Given that this PhD research was restricted to two prisons, one of which was a Category B male local remand establishment, and the other a Category C male training establishment, it is not clear whether or not the intervention developed would be appropriate for prisoners in other types of establishment, nor is it clear whether or not a definitive trial in other types of establishment would be feasible. Thus it is also recommended that this study be replicated in other types of prison establishments, including Category A, Category D, YOIs and establishments holding female prisoners. Key to such future work would be the replication of the phase one qualitative study exploring the NCD risk-behaviours in these different types of prison establishment, to highlight if there are any unique features of these different types of prison which may be more or less likely to encourage NCD risk-behaviour change among prisoners, and thus which should be considered in the refinement/development of a prison-specific appropriate peer-led intervention to modify NCD risk-behaviours among prisoners. While this study did not utilise the TDF to inform the topic guide that was used to explore stakeholders' perceptions of NCD risk-behaviour change in the prison environment, it is a recommendation that future research exploring potential barriers and facilitators to NCD risk-behaviour change in the prison environment uses the TDF to understand the factors pertinent to behaviour change. This is because the TDF has been advocated as a particularly useful framework to explore the key barriers and facilitators to behaviour change in particular contexts, encouraging researchers/intervention designers to consider the many different influences on behaviour and behaviour change, such as cognition, affect, social factors and environmental influences (Atkins et al., 2017).

9.8 Dissemination

Dissemination of information regarding this PhD research project has already commenced, having being presented at the following conferences;

1) Hearty, P., Wright, N.M.J., Anthony, D. and Choo, J. Can peer-led interventions reduce NCD risk-factors amongst prisoners? Poster presentation at the Royal College of General Practitioners and Royal College of Psychiatrists 3rd Health and Justice Summit, London. 6-7th October 2015.

2) Hearty, P., Wright, N.M.J., Anthony, D. and Choo, J. Can peer-led interventions reduce smoking and improve diet and physical activity amongst prisoners? Poster presentation at The 6th Annual University of Leeds Postgraduate Research Conference, Leeds. 8th December 2015.

3) Hearty, P. and Cooke, J. Developing a network of research active prisons: our experience so far in Yorkshire and the Humber. Oral presentation at the University of Glasgow symposium considering the methodological and ethical dimensions of conducting health focused social science research through and beyond prison settings, Glasgow. 18-19th May 2016.

4) Hearty, P., Wright, N.M.J., Anthony, D. and Choo, J. Can a peer-led intervention reduce non-communicable disease risk-factors amongst prisoners? Poster presentation at the University of Leeds School of Healthcare Postgraduate Research Conference, Leeds. 19th October 2016.

5) Hearty, P., Wright, N.M.J., Marshall, P. and Choo, J. Development of a prison-based peer-led intervention to reduce non-communicable disease risk-factors amongst prisoners. Oral presentation at the 10th Academic Health & Policy Conference on Correctional Health, Atlanta, Georgia, USA. 16-17th March 2017.

6) Hearty, P., Wright, N.M.J., Marshall, P. and Choo, J. The potential of peer-interventions to reduce non-communicable disease risk-factors amongst prisoner populations. Oral presentation at the University of Leeds School of Healthcare Postgraduate Research Conference, Leeds. 1st November 2017.

7) Hearty, P. and Wright, N.M.J. Non-communicable diseases (NCDs), their risk-factors and management among prisoner populations. Oral presentation at the 5th Health and Justice Summit, Glasgow. 27-28th November 2017.

The researcher is currently preparing draft papers for submission to international peer-reviewed journals. The findings from phase one which were used alongside the Behaviour Change Wheel (Michie et al., 2014a) to systematically develop the peer-led intervention will comprise one paper; this will be submitted to the International Journal of Prisoner Health. The second phase feasibility study will comprise the second paper and will be submitted to the journal Pilot and Feasibility Studies. The findings will also be shared with the prison and healthcare stakeholders involved in the studies through the form of executive summaries.

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Appendix 1 – NHS REC favourable opinion for phase one

Health Research Authority
NRES Committee North East - York
Jarrow Business Centre
Viking Business Park
Rolling Mill Road
Jarrow, Tyne & Wear
NE32 3DT

Telephone: 0191 4283545

19 March 2015

Dr Nat Wright
Associate Medical Director of Specialist Services and Vulnerable Groups
[redacted]

Dear Dr Wright

Study title:	**The feasibility of peer-educator interventions to address behavioural risk factors for non-communicable diseases in prisons**
REC reference:	**15/NE/0042**
IRAS project ID:	**149224**

Thank you for your e-submission of 19 March 2015, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this favourable opinion letter. The expectation is that this information will be published for all studies that receive an ethical opinion but should you wish to provide a substitute contact point, wish to make a request to defer, or require further information, please contact the REC Manager, Hayley Henderson, nrescommittee.northeast-york@nhs.net. Under very limited circumstances (e.g. for student research which has received an unfavourable opinion), it may be possible to grant an exemption to the publication of the study.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above

research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from NRES. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Covering letter on headed paper [Cover letter]	2	19 March 2015
Interview schedules or topic guides for participants [Interview topic guide]	1	19 March 2015
Interview schedules or topic guides for participants [prisoner focus group topic guide]	1	19 March 2015
Interview schedules or topic guides for participants [interview topic guide]	1	19 March 2015
Interview schedules or topic guides for participants [focus group topic guide]	1	19 March 2015
Participant consent form [Consent]	2	19 March 2015
Participant consent form [Consent]	2	19 March 2015
Participant consent form [Consent]	2	19 March 2015
Participant consent form [Consent]	2	19 March 2015
Participant information sheet (PIS) [ ]	2	19 March 2015
Participant information sheet (PIS) [ ]	1	19 March 2015
Participant information sheet (PIS) [ ]	2	19 March 2015
Participant information sheet (PIS) [ ]	2	19 March 2015
Participant information sheet (PIS) [ ]	2	19 March 2015
Participant information sheet (PIS)	1	19 March 2015
REC Application Form [REC_Form_19032015]		19 March 2015
Research protocol or project proposal [Protocol]	2	10 December 2014
Response to Request for Further Information		19 March 2015
Summary CV for Chief Investigator (CI) [Nat Wright CV]		

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research

Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:
http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

15/NE/0042	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

pp H Hendry

Mr Chris Turnock
Chair

Email:nrescommittee.northeast-york@nhs.net

A Research Ethics Committee established by the Health Research Authority

Appendix 2 – NOMS NRC approval for phase one

National Offender Management Service

Miss Philippa Hearty
[redacted]

National Offender Management Service
National Research Committee
Email: National.Research@noms.gsi.gov.uk

23rd February 2015

APPROVED SUBJECT TO MODIFICATIONS – NOMS RESEARCH

Ref: 2015-017
Title: The feasibility of peer educator interventions to address behavioural risk factors for noncommunicable diseases in prisons

Dear Miss Hearty,

Further to your application to undertake research across NOMS, the National Research Committee (NRC) is pleased to grant approval in principle for ***phase 1*** of your research. The Committee has requested the following modifications for phase 1:

- For the focus groups, consideration should be given to the need for any sampling stratification to ensure certain prisoner types are represented.
- Consideration should be given to the value of focus groups with staff (c.f. one-to-one interviews).
- When using recording devices, the recordings should be treated as potentially disclosive and it is recommended that devices with encryption technology are used. Recordings should be wiped once they have been transcribed and anonymised unless there are clear grounds for keeping them any longer.
- Consideration should be given to using a programme such as NVivo to analyse the transcripts.
- The following should be included in all participation information sheets/consent forms:
  - It must be made clear to research participants that they can refuse to answer individual questions and that this will not compromise them in any way.
  - Participants should consent to any follow-up contact and the method of this contact.
  - Participants should be informed how their data will be used and for how long it will be held.
- The following should also be included in the participation information sheets/consent forms for offenders:
  - Access to any NOMS records for the participants should be explicitly covered.
  - Potential avenues of support should be specified for those who are caused any distress or anxiety.

National Offender Management Service

A further application should be submitted for ***phase 2*** upon completion of phase 1, covering the following:

- It should be clear how the findings from phase 1 have informed the design of phase 2 (including the need for any further qualitative research).
- Please indicate the likely numbers involved in [redacted]
- How will you select prisoners for inclusion [redacted], and will some form of stratification be used?
- Please explain the inclusion/exclusion criteria for selecting the peer educators.
- Further information will be required on what relevant outcomes will be measured, how the outcome measures will be designed and whether existing validated tools will be used. The links between the outcome measures and the final design of the intervention should be clear.
- Please explain the rationale for the specified follow up periods and confirmation that the tools used are appropriate to measure change over these time periods.
- How will the incidence of movement between wings and possible cross-contamination be quantified?
- The component and role of physical exercise should also be clarified.

Before the research can commence you must agree formally by email to the NRC (National.Research@noms.gsi.gov.uk), confirming that you accept the modifications set out above and will comply with the terms and conditions outlined below and the expectations set out in the NOMS Research Instruction (https://www.gov.uk/government/organisations/national-offender-management-service/about/research).

Please note that unless the project is commissioned by MoJ/NOMS and signed off by Ministers, the decision to grant access to prison establishments, National Probation Service (NPS) divisions or Community Rehabilitation Company (CRC) areas (and the offenders and practitioners within these establishments/divisions/areas) ultimately lies with the Governing Governor/Director of the establishment or the Deputy Director/Chief Executive of the NPS division/CRC area concerned. If establishments/NPS divisions/CRC areas are to be approached as part of the research, a copy of this letter must be attached to the request to prove that the NRC has approved the study in principle. The decision to grant access to existing data lies with the Information Asset Owners (IAOs) for each data source and the researchers should abide by the data sharing conditions stipulated by each IAO.

Please quote your NRC reference number in all future correspondence.

Yours sincerely,
National Research Committee

Appendix 3 – Prisoner participant information sheet for phase one

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FEASIBILITY OF PEER-EDUCATOR INTERVENTIONS TO ADDRESS BEHAVIOURAL RISK FACTORS FOR NON-COMMUNICABLE DISEASES IN PRISONS

PARTICIPANT INFORMATION SHEET

You are being invited to take part in a research study which is looking at non-communicable diseases in prisoners. Non-communicable diseases are illnesses that are not a result of infection between prisoners and include conditions such as cancers, heart disease, illnesses affecting breathing and diabetes. Taking part is voluntary, so it is entirely your choice whether or not you decide to take part. Before you agree to take part, it is important that you understand why the study is being carried out and what it will involve. Please read the following information carefully and feel free to ask any questions.

Who is conducting this study?
A researcher from [redacted], who provide the healthcare service in [redacted], is conducting the study. The study has been reviewed and has been given ethical approval by an NHS Research Ethics Committee.

What is the purpose of the study?
The aim of this study is to establish whether or not non-communicable diseases are a health concern for prisoners, and if so, whether a support programme run by prisoners for other prisoners (peer-led intervention/approach) would lead to a healthier lifestyle and less chance of getting a disease. We intend to use the results from this study to develop a prisoner-led programme to reduce smoking and improve diet and physical activity.

What does the study involve?
The study will involve you taking part in a prisoner group discussion. In this discussion, the researcher will explore prisoners' motivations to change aspects of their lifestyles that affect their health and well-being and also what prisoners feel would support them to develop healthier lifestyles within prison. We will ask about your attitudes towards support programmes run by prisoners. The focus group will last no more than 90 minutes and will take place in the prison. An experienced researcher will lead the group discussion. The group discussion will be audio recorded if permission for this is granted by the prison and the participants taking part in the group discussion. If permission is not granted, written notes of the group discussions will be taken by another researcher. If there are any questions during the group discussion which you feel uncomfortable answering, you do not have to answer these questions and this will not affect your legal rights or the service you receive from the prison healthcare.

Why have you been asked to take part?
You have been asked to take part in this study because you are a prisoner at [redacted].

Do you have to take part?
No. Taking part is entirely voluntary and you are free to withdraw from the study at any point up until the data is analysed. Withdrawal from the study can be made through the healthcare application system and the researcher will be informed thereafter. If you withdraw, you do not have to give a reason. If you decide not to take part, this will not affect your legal rights or the service you receive from the prison healthcare in any way. During the focus groups, if there are any questions you are uncomfortable with, you do not need to answer these questions. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. An entry will be placed in your medical notes stating that you have taken part in a research study.

Is the research confidential?
Yes, your involvement in the study will be completely confidential. However, if you do disclose any information relating to illegal acts, behaviour that is against the prison rules or behaviour that is potentially harmful to yourself and others, then such information will need to be shared with an appropriate agency. An entry will be made into your medical notes and the prison computer that you have taken part in a research study so that your prison GP is aware of this, but the nature of the research will not be mentioned.

We anticipate that the group discussion will be audio recorded. The recording of the group discussion will be typed up on a computer and anonymised by one of the research team. Transcripts will be stored electronically within a secure storage area on a secure computer system for five years which only the research team will have access to. The original recording will be deleted from the recording device. Any quotes used in the writing up of the research will not be attributed to any one individual and will be anonymous.

You need to be aware that there can be no guarantee that other prisoners will not disclose discussions outside of the group discussion. Where we are made aware of any issues of bullying resulting from participation in these group discussions, we will take this very seriously and help address this situation through clinical and prison support systems.

What are the benefits of taking part?
Your participation in this research will enable us to understand whether or not non-communicable diseases are a health concern for prisoners and whether these illnesses can be addressed through support programmes run by prisoners. Therefore, your contribution will help provide the evidence for effective interventions for this vulnerable group in the prison. Prisoners will potentially benefit by healthier lifestyles, and ultimately a reduction in the prevalence of these illnesses leading to wider population benefits from savings to NHS treatment costs.

What will happen to the results of the study?
The findings will be reported to a range of people. This will include prisoners, staff working in prison, Government officials and other researchers. The research team will write up the results in a report and will present these findings in Journals and at conferences. You will be provided a summary sheet of the findings if you are still in prison and a full report of the findings will be provided to you on request.

What will happen if you agree to be involved?
After you have signed a copy of the consent form, you will be given details of where and when the focus group will take place. If you experience any distress or anxiety from taking part in the research, please put in an application to see Philippa Hearty or [redacted] who will be able to discuss these concerns with you, and where appropriate will refer you on to a relevant support service.

What happens if there is a problem or something goes wrong?
If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated by members of staff or about any side effects (adverse events) you may have experienced due to your participation in the research, please complete and submit a complaint form; these can be found on each of the prison wings.

In the event that something does go wrong and you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against Spectrum CIC but you may have to pay your legal costs.

If you have any queries or require further details about the research, please complete an application form which you can obtain from the prisoner information desk on your wing, addressing the application to the Healthcare Research Team.

Thank you for taking time to read this information sheet.

Appendix 4 – Staff participant information sheet for phase one

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FEASIBILITY OF PEER-EDUCATOR INTERVENTIONS TO ADDRESS BEHAVIOURAL RISK FACTORS FOR NON-COMMUNICABLE DISEASES IN PRISONS

PARTICIPANT INFORMATION SHEET

You are being invited to take part in a research study which is looking at non-communicable diseases in prisoners. Non-communicable diseases are diseases that are not a result of infection between prisoners and include conditions such as cancers, cardiovascular diseases, chronic respiratory diseases and diabetes. Taking part is voluntary, so it is entirely your choice whether or not you decide to take part. Before you agree to take part, it is important that you understand why the study is being conducted and what it will involve. Please read the following information carefully and feel free to ask any questions.

Who is conducting this study?
A researcher from [redacted], who provide the healthcare service in [redacted], is conducting the study. The study has been reviewed and has been given ethical approval by a NHS Research Ethics Committee.

What is the purpose of the study?
Diseases such as cancers, heart disease, stroke and diabetes are known as 'non-communicable diseases' (NCDs). Cigarette smoking, unhealthy diets and a lack of physical activity contribute to these conditions. NCDs are a health issue for many prisoners. There is increasing evidence that peer-based approaches (that is a form of support that is led and delivered by trained prisoners for other prisoners), might help prisoners to lead healthier lifestyles and make them less likely to suffer from NCDs. As part of this study we will hold discussion groups with prisoners and semi-structured interviews with staff. We will explore the perceived scope for healthy living within prison and examine possible changes that could be applied to make the environment more health promoting. We will explore views on peer-led approaches. We intend to use the results from this study to develop a prisoner-led intervention to reduce smoking and improve diet and physical activity.

Why have you been asked to take part?
You are being asked to take part in this study as you are a member of staff at [redacted]. We aim to interview staff of differing positions and seniority in order to understand the feasibility of developing a peer-led initiative to address the behavioural risk factors for non-communicable diseases in prisons.

Do you have to take part?
No. Taking part is entirely voluntary and you are free to withdraw at any point up until the data is analysed. If you decide not to take part, this will not affect your employment in any way. If you do decide to take part, you will be asked to sign a consent form.

What does the study involve?
This part of the study will involve you taking part in a semi-structured interview. This interview will explore what support could be available to prisoners to help them to develop healthier lifestyles within prison. We will ask about your attitudes to "peer-led" approaches. The interview should last no more than an hour. If there are any questions during the interview which you feel uncomfortable answering, you do not have to answer these questions and this will not affect your employment rights. The interview will be audio recorded with your permission. The recording will be transcribed and anonymised by a member of the research team. Transcripts will be stored electronically on a secure computer system for five years which only the research team will have access to. The original recording will be deleted from the recording device. You will be given a copy of your transcript prior to analysis so that you can confirm it was an accurate reflection of what was said.

Is the research confidential?
Yes, your involvement in the study will be completely confidential. Any information relating to the research that is collected from you will only be seen by members of the research team. All material relevant to the research will be kept securely locked in the research team office. Any quotes used in the writing up of the research will not be attributed to any one individual and will be anonymous.

What are the benefits of taking part?
Your participation in this research will enable us to identify what support could be available to prisoners to help them to develop healthier lifestyles within prison. Therefore, your contribution will help provide the evidence for effective interventions for this vulnerable group in the prison. This vulnerable group will potentially benefit by healthier lifestyles, and ultimately a reduction in the prevalence of these illnesses leading to wider population benefits from savings to NHS treatment costs.

What will happen to the results of the study?
The findings will be reported to a range of people. This will include prisoners, staff working in prison, Government officials and other researchers. The research team will write up the results in a report and will present these findings in Journals and at conferences. You will be provided a summary sheet of the findings and a full report of the findings will be provided to you on request.

What will happen if you agree to be involved?
After you have signed a copy of the consent form, the researcher will arrange a mutually convenient time and location for the interview to take place with you.

If you have any queries or require further details about the research, please contact Philippa Hearty on [redacted] or [redacted]

Thank you for taking time to read this information sheet.

Appendix 5 – Topic guide for prisoner focus groups

Focus group participants: Approximately 6-8.

Logistics: Group room within the prison.

Introduction: Go through the participant information sheet again once all participants have arrived at the venue. Reassure participants of confidentiality, identifying instances where confidentiality would need to be broken (i.e. statement of intent to self-harm or harm another). Discuss participants' right to withdraw from the focus group, whether that be not wanting to get involved with answering a question asked by the researcher or wanting to leave the group discussion fully. Discuss what will happen once the focus group has ended in terms of what the information will be used for and what to do if the participant would like any further information. Read through the consent forms with participants and obtain informed consent from each participant prior to focus group commencing. Explain the nature of focus group interviews, highlighting that they are group discussions rather than a question and answer session.

Background:

- Discuss the aim of the research project
- Carry out introductions which should cover the following information:
    - **Wing location**
    - **Age**
    - **Ethnicity**
    - **Length of time already spent in prison**
    - **Smoking status**

Key questions:

1) Can you tell me what smoking, diet and physical activity is like in prison;
   Probes;
    - Participants' own experiences of these factors in prison
    - Participants' perceptions of others' experiences of these factors in prison
    - Any current interventions to help prisoners address these behaviours in prison

2) Can you tell me what you think has or may help support you live a healthy/healthier lifestyle in prison?
    - Ensure focus kept on smoking/diet/physical activity

   Probes;
    - Motivating/de-motivating factors

- Challenges/barriers
- If negative, any factors in community that help that may be applicable to prison
- Thoughts on smoking ban

3) Can you tell me what you think about prisoner-led schemes in prison?
   - What sorts of prisoner-led schemes already exist? Experiences of these schemes
   - What are the prisoner-workers like?
   - What do you think of a prisoner-led scheme to help modify smoking, diet and physical activity?

4) What would you want a prisoner-led intervention to modify smoking, diet and physical activity to look like?
   - Ensure focus kept on smoking, diet and physical activity rather than wider issues

   Probes;
   - Transferable aspects from other professionally-led schemes addressing these factors
   - Format
   - Content
   - How long
   - The prisoner-workers delivering the intervention
   - Outcomes and monitoring
   - Can it be one intervention looking at all risk-factors?

5) If you were doing the job of prisoner-worker delivering this intervention, what sort of training would you want to receive?
   Probes;
   - Training involved for other roles such as Listeners and healthcare reps – transferrable

6) Can you think of any challenges or facilitators to delivering a prisoner-led intervention to help reduce smoking and improve diet and physical activity in a prison?
   Probes;
   - Problems experienced by current prisoner-led schemes
   - What has helped the Listener scheme and other prisoner-led schemes work
   - Mention implementation issues identified in literature review

Closing the group discussion:

- Is there anything that we haven't discussed that you'd like to add?
- Ensure all participants are OK and haven't experienced any distress or discomfort
- Thank everyone for participating

Appendix 6 – Consent form for prisoner focus groups for phase one

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Participant number:
Prisoner number:

CONSENT FORM – PARTICIPANT FOCUS GROUPS

Title of Project: Feasibility of peer-educator interventions to address behavioural risk factors for non-communicable diseases in prisons

Researchers: Healthcare Research Team

Contact: Prison Healthcare Research Team
[redacted]

If you agree with each point below, please sign your initials in the boxes

1. I confirm that I have read and understood the information sheet dated 19th March 2015, Version 2 for the above study. I have had the opportunity to consider the information and ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw from the study up until the data is analysed, without giving any reason – and without my medical care or legal rights being affected. ☐

3. I agree that any data collected about me as part of the study may be used, anonymously, in the presentation of the research. ☐

4. I agree for an entry to be placed in my medical notes and on the prison computer so that my prison GP is aware that I have taken part in a research study. ☐

5. I agree to the research team taking my address to post the summary of the study results if I expect to be released before completion of the study. ☐

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6. I understand that my information may be shared if I disclose any information relating to illegal acts, behaviour that is against the prison rules or behaviour that is potentially harmful to myself and others. ☐

7. I understand that the group discussion will be audio-recorded and agree to this. ☐

8. I understand that relevant sections of data collected during the study may be looked at by individuals from relevant regulatory authorities, where it is relevant to my taking part in this research. I give permission for these individuals to have such access. ☐

9. I agree to take part in the above study. ☐

Name in block capitals…….....

Signed……..
Date……..

Witnessed by (researcher)……..
Date……...

When completed, 1 copy to be kept by the participant; 1 copy to be kept by the healthcare research team.

If you have any queries or require further details about the research, please complete an application form which you can obtain from the prisoner information desk on your wing, addressing the application to the Healthcare Research Team.

Appendix 7 – Topic guide for staff interviews

Interviewer introduction: Reassure participants of confidentiality, anonymity and the right to withdraw. Discuss what will happen once the interview has ended in terms of what the information will be used for and what to do if the participant would like any further information. Obtain informed consent before the interview commences. Explain the nature of qualitative interviews, highlighting that they are a discussion rather than a yes and no question and answer session.

Background:

Ask participant the following information

- What their role is
- How long have they been in this role
- How long have they worked in prison for overall

Key questions:

1. Can you tell me what smoking, diet and physical activity is like amongst prisoners in this establishment?
   Probes;
   - Smoking levels amongst prisoners? Contributing factors?
   - What is the food provided like? What sort of healthy options are there (including on canteen)?
   - What are the activity levels of prisoners in this jail? What sort of opportunities are there?
   - Any current or past interventions to address smoking/diet/activity?

2. What do you think already exists or can be done to help support prisoners live a healthy/healthier lifestyle in prison?
   Probes;
   - Motivating/de-motivating factors
   - Challenges/barriers
   - Smoking ban

3. What do you think about the use of peer-led schemes in prisons?
   Probes;
   - What sorts of prisoner-led schemes already exist? Views of these schemes
   - What are the prisoner-workers like?

4. Can you tell me your thoughts on introducing a peer-led intervention into the prison to address prisoners smoking, diet and physical activity?
   Probes;
   - Receptiveness of prisoners and staff
   - Impact on prisoners

5. What do you think a good peer-led intervention to address prisoners smoking, diet and physical activity levels should look like?
   Probes;
   - Transferable aspects from other professionally-led schemes addressing these factors
   - Format
   - Content
   - How long
   - The prisoner-workers delivering the intervention
   - Outcomes and monitoring
   - Can it be one intervention covering all risk-factors?

6. Can you tell me about what sort of training the peer-deliverers should receive?
   Probes;
   - Experiences of being involved in any peer-training
   - Training involved for other roles such as Listeners and healthcare reps – transferrable
   - Barriers to training
   - Accreditation

7. Can you think of any challenges or facilitators with regards to delivering a peer-led intervention to help reduce smoking and improve diet and physical activity in this prison?
   Proves;
   - Problems experienced by current prisoner-led schemes
   - What has helped the Listener scheme and other prisoner-led schemes work
   - Mention implementation issues identified in literature review

Closing the interview:

- Is there anything that we haven't discussed that you'd like to add?
- Ensure participant is OK and hasn't experienced any distress or discomfort
- Thank participant for taking part in interview

Appendix 8 – Consent form for staff interviews for phase one

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CONSENT FORM – STAFF INTERVIEWS

Title of Project: Feasibility of peer-educator interventions to address behavioural risk factors for non-communicable diseases in prisons

Researchers: Healthcare Research Team

Contact: Prison Healthcare Research Team

[redacted]

If you agree with each point below, please sign your initials in the boxes

1. I confirm that I have read and understood the information sheet dated 19th March 2015, Version 2 for the above study. I have had the opportunity to consider the information and ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw from the study up until the data is analysed, without giving any reason – and without my employment rights being affected. ☐

3. I agree that any data collected about me as part of the study may be used, anonymously, in the presentation of the research. ☐

4. I understand that my one-to-one discussion with the researcher will be audio-recorded and agree to this. ☐

5. I agree to take part in the above study. ☐

Name in block capitals…….....

Signed……..
Date……..

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Witnessed by (researcher)……..
Date……...

When completed, 1 copy to be kept by the participant; 1 copy to be kept by the healthcare research team.

If you have any queries or require further details about the research, please contact Philippa Hearty on telephone extension [redacted] or [redacted].

Appendix 9 – Example of the coding process

Code: Smoking to alleviate boredom

ID	Extract
Focus group 1	Boredom, surroundings
Focus group 1	It helps with boredom as well when you're constantly banged up
Focus group 2	When you're behind your door it's the boredom, isn't it
Focus group 2	I was getting banged up, I was getting kept up like, 23 and a half hours man, a day, banged up. And I don't think it were right. So that time made me want to smoke more and more, because I were that stressed out and that bored, I just wanted to smoke
Focus group 2	Yeah, because they struggle to cope with the boredom, and stress and things like that
Focus group 2	That's why a lot of people carry on smoking, don't they. Because of all the boredom
Focus group 3	Smoking is main thing that's used to cope with boredom and stress in here
Focus group 3	Boredom
Focus group 3	Boredom in a box
Focus group 3	Prisoner participant: You're away from your friends, you're away from your family, you've got nothing to do apart from watch TV or read a book Prisoner participant: So you just sit there smoking
Focus group 3	Prisoner participant: It's hard though man because as soon as you're banged up at five o'clock you're just sat there aren't you Prisoner participant: That's right, yea.

	Prisoner participant: Boredom, just sat there
Focus group 3	Prisoner participant: It just comes down to boredom I think. Prisoner participant: It's because of boredom, isn't it. You know what I mean.
Interview 1	You know they watch tele don't they, they just lay there, and if they can't sleep, they're just lying there bored thinking, you know, about smoking
Interview 3	You often hear them saying that they smoke more when they're banged up on a night because they're bored or because they've been stressed even
Interview 7	I mean prisoners get bored, just if, you know, if there isn't enough activity… and smoking and boredom often go well together
Interview 8	But, you know, if you're not taking illegal drugs, smoking is the only legal drug that you can use to relieve your boredom and tension I suppose
Interview 9	I'm smoking loads because you know it's through boredom or we've nothing else to do or it's stress, stress because I'm in here so I'm smoking more
Interview 9	You get a lot of people saying that they smoke because they're bored, they smoke more now because they're bored
Interview 11	Boredom probably…I mean I'm an ex-smoker of 15 years and I started smoking at 19-year-old when I was in the navy, and the only reason I started smoking was because of boredom and the fact obviously that cigarettes were cheap when you were in the navy. But erm yeah…I would say that probably boredom is the biggest thing

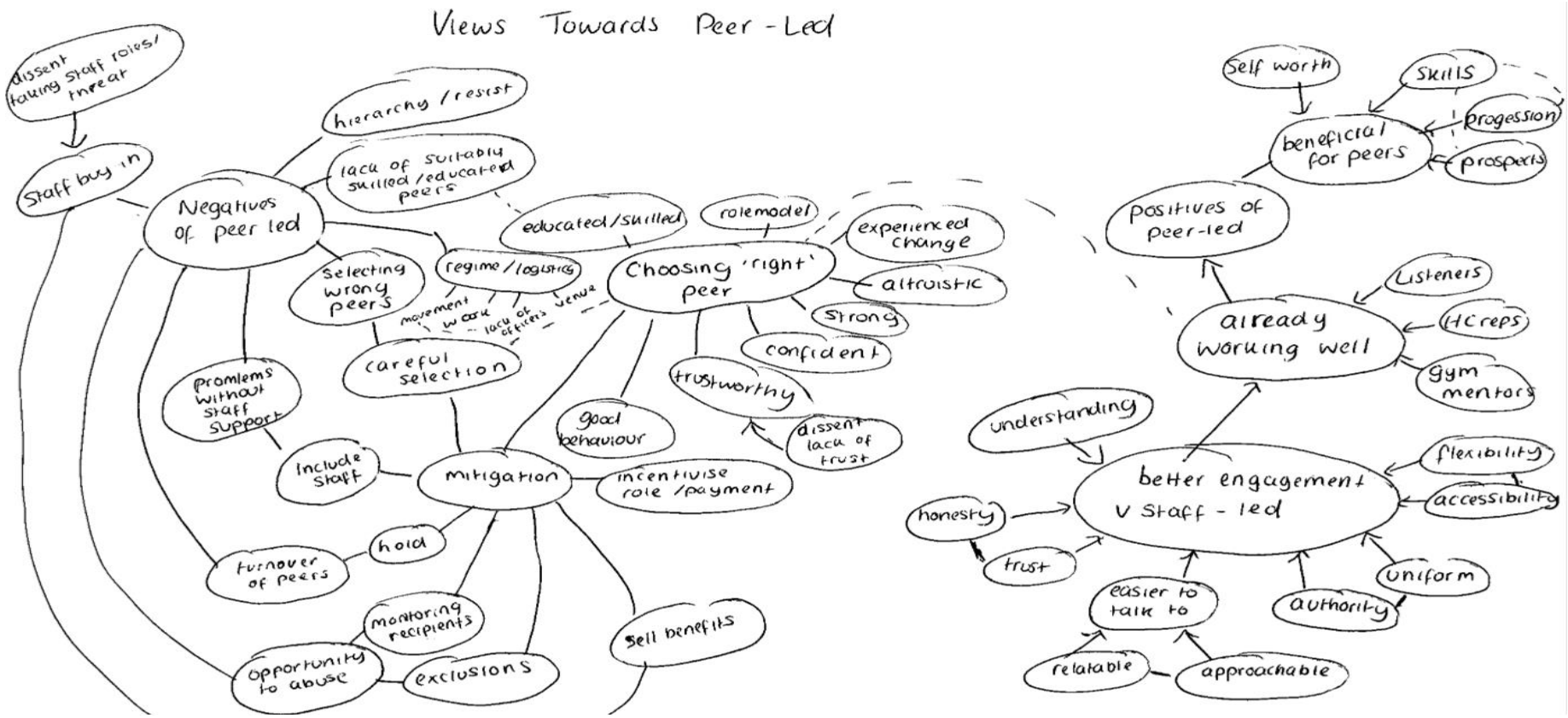
Code: Smoking to alleviate stress

ID	Extract
Focus group 1	Smoking, with that, it's a stress reliever
Focus group 1	You know, you're in here, you're in surroundings which you don't want to be. And smoking helps
Focus group 1	If I've had a bad day I smoke more. That's it
Focus group 1	I lost my Nanna this sentence so that were hard, I smoked loads then
Focus group 1	I think with a lot of people it is the stress of what's coming up, if you're waiting to be sentenced, or you're fighting your case
Focus group 1	Or, as is the case with 90% of people in prison, you have family and domestic issues outside, which you cannot control, but controls you. It controls your thoughts. You get stressed about it
Focus group 1	I'd say those are the things that, whether you deal with it outwardly or inwardly, those are the things that then lead you to smoking more
Focus group 2	It stops you stressing out
Focus group 2	I was getting banged up, I was getting kept up like, 23 and a half hours man, a day, banged up. And I don't think it were right. So that time made me want to smoke more and more, because I were that stressed out and that bored, I just wanted to smoke.
Focus group 2	Yeah, because they struggle to cope with the boredom, and stress and things like that.
Focus group 3	Smoking is main thing that's used to cope with boredom and stress in here.
Focus group 3	It's stressful, isn't it.

Interview 1	Most say that they want to use it as a means of stress relief and that sort of thing
Interview 1	You don't know what's happening, the slightest little bit of stress or somebody says no to them, you know, the first thing they go for is the fags
Interview 3	You often here them saying that they smoke more when they're banged up on a night because they're bored or because they've been stressed even
Interview 3	I think stress does play a role because we're a remand prison, so there's a lot in here that are waiting for court cases, sentence hearings and that
Interview 4	Smoking is quite high, the high majority of prisoners smoke. I think it helps them deal with the stress.
Interview 4	I think tobacco is a big thing for them, it's a big stress beater isn't it, and it's, when you're working out on the wings, the majority of your queries tend to be around tobacco, a lot of queries tend to be about emergency tobacco, they've just come in and obviously haven't had chance to order canteen and that is the first priority because it is, it helps them deal with the stress of being in prison and things
Interview 5	In the first few, first week or so they probably smoke more because of the stress and the changes to the circumstances, you know, coming from outside, waiting around for court cases and being separated from family and that
Interview 6	I can fully appreciate that in this environment it is very difficult to actually stop smoking, because of stress, because people always think that they smoke more when they're stressed

Interview 7	Sometimes things have happened to them, it's kind of a way of coping, relieve stress
Interview 8	But, you know, if you're not taking illegal drugs, smoking is the only legal drug that you can use to relieve your boredom and tension I suppose
Interview 9	I'm smoking loads because you know it's through boredom or we've nothing else to do or it's stress, stress because I'm in here so I'm smoking more
Interview 9	Like I said, people tend to smoke to deal with stress and anxiety so if they're a smoker and they're addicted to it, then that's what they want to do
Interview 10	For some of them it really helps them, you know, it helps to keep them calm, it keeps them relaxed, it helps them cope with what's going on
Interview 12	Participant: I mean a lot of the lads probably smoke more, family, stress and things, you know, like if they've had a poor phone call with their girlfriend. *Researcher: So stress plays a bit of a role?* Participant: Oh yes definitely, well they tell me it does so...
Interview 12	I mean they're away from their families a long time and they might see their girlfriend once a fortnight on a visit, it only takes a couple of really bad phone calls…and if they've been used to smoking and that's what they do behind their door on a night time…

Appendix 10 – Example of mind-map from the thematic analysis



Appendix 11 – Peer-worker job description

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Smoking, diet and physical activity intervention peer-worker: Job Description

Purpose of the job
To provide peer education and support to prisoners around their smoking, diet and physical activity over a six-week period.

This will be part of the research project looking at whether a prisoner-led intervention can help to reduce smoking and improve diet and physical activity in prisoners.

The role will involve working closely with the researcher of the project.

Main responsibilities

- To facilitate small group sessions with prisoners focusing on smoking, diet and physical activity
- To provide education to prisoners around healthy lifestyle choices at the group sessions
- To provide support to prisoners at the group sessions
- To provide one-to-one support outside of the group sessions for prisoners when needed
- Undertake training focusing on changing smoking, diet and physical activity in prison
- To work in a flexible and non-judgemental way in supporting prisoners who want to address their smoking, diet and physical activity habits whilst in prison
- Work closely with the researcher and feedback any problems with the intervention so these problems can be addressed

Qualities

- Have good communication skills and be able to relate to a wide range of people from different backgrounds and cultures
- Some understanding of the effects of unhealthy lifestyle choices
- Be willing to undertake training on smoking cessation and improving diet and physical activity in prison
- A good understanding of confidentiality
- To have passion and commitment to the role and fulfil this to the best of your ability
- Will need to be cleared for the role by the security department
- Standard or enhanced IEP Status

Appendix 12 – Peer-worker recruitment poster

WE ARE RECRUITING NOW FOR CANDIDATES TO WORK AS HEALTHY LIFESTYLES CHAMPIONS FOR A 6-WEEK RESEARCH PROJECT

We would like a Champion on each wing

The duties of this role will be:

- Run group sessions focusing on smoking cessation and improving diet and physical activity
- Offer support to prisoners who want help to stop smoking and improve their diet and physical activity levels
- Attend training and supervision sessions

TO APPLY FOR THIS POST YOU MUST:

- Want to help other prisoners live a healthier lifestyle
- Be drug and adjudication free
- Have at least 6 months left to serve
- Set an example to other prisoners around you
- Be prepared for random drug testing
- Pass a security check
- Attend an informal interview with the researcher

If you are interested in the role, please complete an application form to speak with the researcher which can be found at the PID desk. Once completed, please hand the form to the PID workers on your wing.

Appendix 13 – Peer-worker participant information sheet

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A study exploring if a prisoner-led intervention can help reduce smoking and improve diet and physical activity in prisoners

You are being invited to take part in a research project which is looking at the feasibility of a support programme run by prisoners for other prisoners (prisoner-led intervention) to help reduce smoking and improve diet and physical activity in prisoners. The aim of the health prisoner-led intervention is to increase healthy lifestyle changes and choices. The research will look at the implementation of the intervention and its impact on behaviour, knowledge and attitudes. The research will involve you working with other prisoners to help them stop smoking and improve their diet and physical activity levels.

Before you decide to take part, it is important that you understand why the study is being done and what it will involve. Please read the following information carefully and feel free to ask any questions. Also talk to others about the study if you wish.

1. Who is conducting this study?
A researcher from the University of Nottingham is doing the research. The research is being done as part of the researchers PhD which is registered at the University of Leeds. The study has been given ethical approval by a Research Ethics Committee and the National Offender Management Service.

2. What is the purpose of the study?
The aim of this study is to inform a larger study exploring if a prisoner-led intervention can help to reduce smoking and improve diet and physical activity in prisoners. To do this, we need to find prisoners who want to work in a peer-role which will focus on helping other prisoners to change their smoking, diet and physical activity habits.

3. What will the study involve if I agree to take part?
The researcher will need to check your prisoner record and conduct an informal interview with you to make sure that you eligible to work in the peer-role. If you are eligible and are selected to work in the peer-role, you will attend a 1-week training course which will be held in the prison. This training will teach you how to help other prisoners with smoking cessation and improving diet and physical activity levels. After the training, you will run group sessions over 6 weeks to prisoners who have been selected to get the intervention. You will meet with the researcher on a weekly basis so that you can discuss how the intervention is going and if you have had any problems. You may also be asked to attend training update sessions if these are needed.

4. Why have you been asked to take part?
You have been asked to take part in this study because you are a prisoner at [redacted] and have said you are interested in working in the peer-role. We hope to recruit around 8 peer-workers from these 2 prisons.

5. Do you have to take part?
No. Taking part is voluntary and you are free to withdraw from the study at any point. Withdrawal from the study can be made through the healthcare application system. If you withdraw, you do not have to give a reason. If you decide not to take part, this will not affect

your legal rights or the service you receive from the prison healthcare in any way. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form.

6. Is the research confidential?

You need to be aware that the role of peer-worker is a trusted role in the prison so you will need to be cleared by security before you can take part. What is talked about during the group intervention sessions will remain confidential. However, if you or another prisoner does share any information relating to illegal acts, behaviour that is against the prison rules or behaviour that is potentially harmful to yourself and others, then such information will need to be shared with an appropriate agency.

You also need to be aware that we can't guarantee that prisoners selected to get the intervention will not disclose the information discussed outside of the group sessions. Where we are made aware of any issues of bullying from taking part in these group sessions, we will take this very seriously and support people through health and prison support systems.

7. What are the benefits of taking part?

Taking part in the research will help us understand if a larger scale study exploring a prisoner-led intervention can help to reduce smoking and improve diet and physical activity in prisoners can be conducted. Another benefit might be that you help another prisoner to stop smoking or improve their diet and physical activity and therefore live a healthier lifestyle.

8. What will happen to the results of the study?

The findings will be reported to a range of people. This will include prisoners, staff working in prison, Government officials and other researchers. The research team will write up the results in a report and will present these findings in Journals and at conferences. You will be given a summary sheet of the findings if you are still in prison at the end of the research. If you are released from prison before the data is analysed and would like to know the results, we can post a summary of the research findings to you.

9. What happens if there is a problem or something goes wrong?

If you experience any distress or anxiety from taking part in the research, please put in an application to see Philippa Hearty who will be able to discuss these concerns with you.

If you wish to complain, or have any concerns about the way you have been approached or treated by members of staff or about any side effects you may have experienced due to being part of the research, please complete and submit a complaint form; these can be found on each of the prison wings or from Healthcare.

In the event that something does go wrong and you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against Spectrum CIC but you may have to pay your legal costs.

If you have any questions or want further details about the research, please complete an application form which can be found on the prisoner information desk on your wing, addressing the application to Philippa Hearty.

Thank you for taking time to read this information sheet.

Appendix 14 – Peer-worker job application form

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Smoking, diet and physical activity intervention peer-worker: Job Application Form

Purpose of the job
To provide peer education and support to prisoners around their smoking, diet and physical activity over a six-week period.

This will be part of the research project looking at whether a prisoner-led intervention can help to reduce smoking and improve diet and physical activity in prisoners.

The role will involve working closely with the researcher of the project.

Please note: To be considered for the role you must be willing to undertake random drug testing.

Please give your completed application form to the PID worker on your wing – applications must be handed in by Friday 2nd December 2016 at the latest.

Full name:	Prison number:
Time left to serve:	Location:
Date of application:	Current job/activity:
IEPS: Enhanced ☐ Standard ☐ Basic ☐	

Prisoner – Please explain why you would like to work in this role:

Identifying logos removed

Signed:…….. Date:……..

To be completed by an officer on the wing where the prisoner resides – please refer to the wing history sheet and comment on suitability and indicate any relevant entries
Signed:…….. Date:……..

Please give your completed application to the PID worker on your wing – applications must be handed in by <u>Friday 2nd December 2016</u> at the latest.

Identifying logos removed

To be completed by education or workshop – please refer to the history sheet and comment on suitability and indicate any relevant entries
Signed:…….. Date:……..

Security/Activities – Please indicate your approval for this application form to proceed
Application form approved Yes ☐ No ☐ If not approved please state why? …… …… …….. Signed:…….. Date:……..

Researcher – Please indicate your approval for this application form to proceed
Application form approved Yes ☐ No ☐ If not approved please state why? …… …… …….. Signed:…….. Date:……..

Appendix 15 – Peer-worker consent form

Identifying logos removed

Participant number:

CONSENT FORM

Title of Project: A study exploring if a prisoner-led intervention can help to reduce smoking and improve diet and physical activity in prisoners

Researcher: Philippa Hearty

Contact: [redacted]

If you agree with each point below, please sign your initials in the boxes

1. I confirm that I have read and understood the information sheet dated 6th June 2016, Version 1 for the above study. I have had the opportunity to consider the information and ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw from the study, without giving any reason – and without my medical care or legal rights being affected. ☐
3. I agree that any data collected about me as part of the study may be used, anonymously, in the presentation of the research. ☐
4. I agree to the researcher accessing my prison records via the database p-NOMIS for the purposes of the research evaluation. ☐
5. I understand that I will need to be cleared by the security department to work in the peer role. ☐
6. I understand that I will need to undertake training to be able to work in the peer role. ☐
7. I understand that I will be required to run small group sessions to other prisoners as part of the role. ☐
8. I agree for an entry to be placed in my medical notes and on the prison computer so that my prison GP is aware that I have taken part in a research study. ☐

9. I agree to the research team taking my address to post the summary of the study results if I expect to be released before completion of the study. ☐

10. I understand that my information may be shared if I disclose any information relating to illegal acts, behaviour that is against the prison rules or behaviour that is potentially harmful to myself and others. ☐

11. I understand that relevant sections of data collected during the study may be looked at by individuals from relevant regulatory authorities, where it is relevant to my taking part in this research. I give permission for these individuals to have such access. ☐

12. I agree to take part in the above study. ☐

Name in block
capitals…….....

Signed……..
Date……..

Witnessed by (researcher)……..
Date……...

When completed, 1 copy to be kept by the participant; 1 copy to be kept by the researcher.

If you have any queries or want further details about the research, please complete an application form which you can find on the prisoner information desk on your wing, addressing the application to Philippa Hearty

Appendix 16 – Peer-worker interview questions

1) Are you a smoker? If yes, are you wanting or trying to stop?

2) Do you try and be active and eat healthily?

3) What motivates you to try and live a healthy lifestyle?

4) What do you think are the main qualities needed for this role?

5) What is your understanding of confidentiality?

6) What will you bring to the role?

7) Describe a time when you have supported someone who had a problem, and how you would you apply it to those on the healthy lifestyles course?

8) What pressures and difficulties do you think the position will involve, and how will you cope with and manage these?

9) How would you respond to a challenging peer in the group? Please give an example of what you would say?

10) What is your current sentence status? Any transfer requests for Category D or any HDC applications?

11) Any questions for us?

Appendix 17 – NHS REC favourable opinion for phase two

London - South East Research Ethics Committee
Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

Telephone: 0161 625 7109
Fax: 0161 625 7919

01 July 2016

Dr Nat Wright
Spectrum CIC
1 Navigation Walk
Hebble Wharf, Wakefield
WF1 5RH

Dear Dr Wright

Study title:	**A feasibility study exploring the potential of a peer-led intervention in prison to modify the behavioural risk factors for non-communicable diseases**
REC reference:	**16/LO/0815**
IRAS project ID:	**199357**

Thank you for your submission of 10 June 2016, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair, Mr Ron Driver and Mr Guy Gardener.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Mrs Margaret Hutchinson, nrescommittee.london-southeast@nhs.net.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm

through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett (catherineblewett@nhs.net), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

The Committee has not yet completed any site-specific assessment (SSA) for the non-NHS research site(s) taking part in this study. The favourable opinion does not therefore apply to any non-NHS site at present. We will write to you again as soon as an SSA application(s) has been reviewed. In the meantime no study procedures should be initiated at non-NHS sites.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Covering letter on headed paper [Cover letter]	1	14 April 2016
Covering letter on headed paper [Cover letter]	2	09 June 2016
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Confirmation of Spectrum Insurance]		31 March 2016

Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [University of Leeds Insurance]		22 September 2015
IRAS Checklist XML [Checklist_14042016]		14 April 2016
Other [Jimmy CV summary]	1	14 April 2016
Other [PIS for peer-workers]	1	06 June 2016
Other [Consent form for peer-workers]	1	08 June 2016
Other [Job desciption for peer-workers]	1	03 June 2016
Other [Peer-worker job application form]	1	03 June 2016
Participant consent form [Consent form]	1	11 April 2016
Participant information sheet (PIS) [Participant Information]	2	03 June 2016
REC Application Form [REC_Form_14042016]		14 April 2016
Research protocol or project proposal [Protocol]	3	13 April 2016
Summary CV for Chief Investigator (CI) [Nat summary CV]		12 April 2016
Summary CV for student [Philippa CV summary]	1	14 April 2016
Summary CV for supervisor (student research) [Denis CV summary]	1	14 April 2016

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

With the Committee's best wishes for the success of this project.

Yours sincerely

pp
Professor David Caplin
Chair

Email:nrescommittee.london-southeast@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Ms Suzanne Slater*

Appendix 18 – NOMS NRC approval for phase two

National Offender Management Service

Miss Philippa Hearty
[redacted]

National Offender Management Service
National Research Committee
Email: National.Research@noms.gsi.gov.uk

21 June 2016

APPROVED SUBJECT TO MODIFICATIONS – NOMS RESEARCH

Ref: 2016-136
Title: Title of proposed research: A feasibility study exploring the potential of a peer-led intervention in prison to modify the behavioural risk factors for non-communicable diseases.

Dear Miss Hearty,

Further to your application to undertake research across NOMS, the National Research Committee (NRC) is pleased to grant approval in principle for your research. The Committee has requested the following modifications:

- The following should be included in all participation information sheets/consent forms:
  - It must be made clear to research participants that they can refuse to answer individual questions or withdraw from the research until a designated point, and that this will not compromise them in any way.
  - Participants should be informed how their data will be used and for how long it will be held.
  - It needs to be clear that the following information has to be disclosed: behaviour that is against prison rules and can be adjudicated against, illegal acts, and behaviour that is potentially harmful to the research participant (e.g. intention to self-harm or complete suicide) or others.
  - Potential avenues of support should be specified for those who are caused any distress or anxiety.
  - The respondent should be asked to direct any requests for information, complaints and queries through their prison establishment/community provider. Direct contact details should not be provided.
- In the final research reports, the limitations should be clearly set out (e.g. the findings may not be generalisable across the estate).

Before the research can commence you must agree formally by email to the NRC (National.Research@noms.gsi.gov.uk), confirming that you accept the modifications set out above and will comply with the terms and conditions outlined below and the expectations set out in the NOMS Research Instruction

National Offender Management Service

(https://www.gov.uk/government/organisations/national-offender-management-service/about/research).

Please note that unless the project is commissioned by MoJ/NOMS and signed off by Ministers, the decision to grant access to prison establishments, National Probation Service (NPS) divisions or Community Rehabilitation Company (CRC) areas (and the offenders and practitioners within these establishments/divisions/areas) ultimately lies with the Governing Governor/Director of the establishment or the Deputy Director/Chief Executive of the NPS division/CRC area concerned. If establishments/NPS divisions/CRC areas are to be approached as part of the research, a copy of this letter must be attached to the request to prove that the NRC has approved the study in principle. The decision to grant access to existing data lies with the Information Asset Owners (IAOs) for each data source and the researchers should abide by the data sharing conditions stipulated by each IAO.

Please quote your NRC reference number in all future correspondence.

Yours sincerely,
National Research Committee

National Research Committee - Terms and Conditions

All research

- **Changes to study -** Informing and updating the NRC promptly of any changes made to the planned methodology. ***This includes changes to the start and end date of the research***.
- **Dissemination of research** - The researcher will receive a research summary template and project review form template attached to the research approval email from NOMS. These two forms are for completion once the research project has ended (ideally within one month of the end date).The researcher should complete the research summary document for NOMS (approximately three pages; maximum of five pages) which (i) summaries the research aims and approach, (ii) highlights the key findings, and (iii) sets out the implications for NOMS decision-makers. The research summary should use language that an educated, but not research-trained person, would understand. It should be concise, well organised and self-contained. The conclusions should be impartial and adequately supported by the research findings. It should be submitted to the NRC alongside the completed project review form (which covers lessons learnt and asks for ratings on key questions). Provision of the research summary and project review form is essential if the research is to be of real use to NOMS.
- **Publications -** The NRC (National.Research@noms.gsi.gov.uk) receiving an electronic copy of any papers submitted for publication based on this research at the time of submission and at least one month in advance of the publication.
- **Data protection** - Researchers must comply with the requirements of the Data Protection Act 1998 and any other applicable legislation. Data protection guidance can be found on the Information Commissioner's Office website: http://ico.org.uk. Researchers should store all data securely and ensure that information is coded in a way that maintains the confidentiality and anonymity of research participants. The researchers should abide by any data sharing conditions stipulated by the relevant data controllers.
- **Research participants -** Consent must be given freely. It will be made clear to participants verbally and in writing that they may withdraw from the research at any point and that this will not have adverse impact on them. If research is undertaken with vulnerable people – such as young offenders, offenders

with learning difficulties or those who are vulnerable due to psychological, mental disorder or medical circumstances - then researchers should put special precautions in place to ensure that the participants understand the scope of their research and the role that they are being asked to undertake. Consent will usually be required from a parent or other responsible adult for children to take part in the research.

- **Termination** - NOMS reserves the right to halt research at any time. It will not always be possible to provide an explanation, but NOMS will undertake where possible to provide the research institution/sponsor with a covering statement to clarify that the decision to stop the research does not reflect on their capability or behaviour.

Research requiring access to prison establishments, NPS divisions and/or CRCs

- **Access –** Approval from the Governing Governor/Director of the establishment or the Deputy Director/Chief Executive of the NPS division/CRC area you wish to research in. (Please note that NRC approval does not guarantee access to establishments, NPS divisions or CRC areas; access is at the discretion of the Governing Governor/Director or Deputy Director/Chief Executive and subject to local operational factors and pressures). This is subject to clearance of vetting procedures for each establishment/NPS division/CRC area.
- **Security** – Compliance with all security requirements.
- **Disclosure –** Researchers are under a duty to disclose certain information to prison establishments/probation provider. This includes behaviour that is against prison rules and can be adjudicated against, undisclosed illegal acts, and behaviour that is potentially harmful to the research participant (e.g. intention to self-harm or complete suicide) or others. Researchers should make research participants aware of this requirement. The Prison Rules can be accessed here and should be reviewed:
  http://www.justice.gov.uk/downloads/offenders/psipso/pso/PSO_0100_the_prison_rules_1999.doc

Appendix 19 – NHS SSI approval for phase two at Prison A

NHS
Health Research Authority

London - South East Research Ethics Committee
Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

30 August 2016

Dr Nat Wright
Spectrum CIC
1 Navigation Walk
Hebble Wharf, Wakefield
WF1 5RH

Dear Dr Wright

Study title:	**A feasibility study exploring the potential of a peer-led intervention in prison to modify the behavioural risk factors for non-communicable diseases**
REC reference number:	**16/LO/0815**
SSA reference number:	**16/LO/1623**
IRAS project ID:	**199357**

The REC gave a favourable ethical opinion to this study on 01 July 2016.

Following site-specific assessment by the Committee, I am pleased to confirm the extension of the favourable opinion to the new site(s) and investigator(s) listed below:

Research site	*Principal Investigator / Local Collaborator*
[redacted]	Miss Philippa Hearty

The favourable opinion is subject to management permission or approval being obtained from the host organisation prior to the start of the study at the site concerned.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

16/LO/0815	***Please quote this number on all correspondence***

Yours sincerely

Nafeesa Khanam
REC Assistant

Appendix 20 – NHS SSI approval for phase two at Prison B

NHS
Health Research Authority
London - South East Research Ethics Committee
Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

30 August 2016

Dr Nat Wright
Spectrum CIC
1 Navigation Walk
Hebble Wharf, Wakefield
WF1 5RH

Dear Dr Wright

Study title:	**A feasibility study exploring the potential of a peer-led intervention in prison to modify the behavioural risk factors for non-communicable diseases**
REC reference number:	**16/LO/0815**
SSA reference number:	**16/LO/1623**
IRAS project ID:	**199357**

The REC gave a favourable ethical opinion to this study on 01 July 2016.

Following site-specific assessment by the Committee, I am pleased to confirm the extension of the favourable opinion to the new site(s) and investigator(s) listed below:

Research site	*Principal Investigator / Local Collaborator*
[redacted]	Miss Philippa Hearty

The favourable opinion is subject to management permission or approval being obtained from the host organisation prior to the start of the study at the site concerned.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

16/LO/0815	***Please quote this number on all correspondence***

Yours sincerely

Nafeesa Khanam
REC Assistant

Appendix 21 – Recruitment poster for phase two

DO YOU WANT TO

Stop smoking?

Improve your diet?

Improve your physical activity levels?

Then please consider joining our research project looking at prisoner-led interventions to support live a healthy lifestyle in prison .

Image removed for copyright purposes

Image removed for copyright purposes

If you take part, you may potentially be offered a 6 week programme led by a trained prisoner. The programme will provide information and support and will cover:

- Stopping smoking
- Being physically active
- Eating healthily

For more information about the research please complete an application form and hand the completed form to the PID desk.

Image removed for copyright purposes

Appendix 22 – Participant information sheet for phase two

Identifying logos removed

A study exploring if a prisoner-led intervention can help reduce smoking and improve diet and physical activity in prisoners

You are being invited to take part in a research project which is looking at the feasibility of doing a research project evaluating a support programme run by prisoners for other prisoners (prisoner-led intervention) to help reduce smoking and improve diet and physical activity in prisoners. The aim of the health prisoner-led intervention is to increase healthy lifestyle changes and choices. The research will also look at the impact of the intervention on behaviour, knowledge and attitudes.

Before you decide to take part, it is important that you understand why the study is being done and what it will involve. Please read the following information carefully and feel free to ask any questions. Also talk to others about the study if you wish.

1. Who is conducting this study?
A researcher from [redacted] is doing the research. The research is being done as part of the researchers PhD which is registered at the University of Leeds. The study has been given ethical approval by a Research Ethics Committee and the National Offender Management Service.

2. What is the purpose of the study?
The aim of this study is to see if a large-scale project can be done to evaluate if a prisoner-led intervention can help to reduce smoking and improve diet and physical activity in prisoners. To find this out we need to recruit two groups of people:

- Group 1: Prisoners who get the prisoner-led intervention.
- Group 2: Prisoners who don't get the prisoner-led intervention.

3. What is a randomised controlled trial?
This research study is a randomised controlled trial where participants will be selected to one of two groups; the intervention group or the control group. In this research study, the intervention group is the group that get the prisoner-led intervention. The control group will not receive the prisoner-led intervention, which is usual practice in [redacted].

If you decide to take part in this study, you will have an equal chance of getting the prisoner-led intervention or the control. The decision is random as it is based on chance, and is a bit like the toss of a coin. A computer will be used to decide if you will get the prisoner-led intervention or the control, not you or the researcher.

4. What will the study involve if I agree to take part?
The researcher will go through all of the information in this sheet with you to make sure that you understand what the research study is about and so that you have the chance to ask any questions. It is important for you to know that the researcher will need to check your prisoner record as part of the research. This is to make sure that they can contact you if you are transferred to another prison during the research and also to check your smoking, diet and physical activity information. The researcher will also need to take a few contact details from you so that they can contact you if you are released from prison during the research.

If you decide that you do want to take part, the researcher will ask you to sign a consent form. While you are with the researcher, they will ask you questions to check that you are eligible to take part. The researcher will then need to check your prisoner record to confirm that you are eligible and, if you are, you will be randomised into the study. You will be randomised to either get the prisoner-led intervention or not to get the prisoner-led intervention.

Before you are randomised, the researcher will give you a survey which they will help you to complete. The survey will ask you questions about smoking, diet, physical activity and wellbeing. It will also ask you questions around your personal details such as age, health conditions and education. If there are any questions in the survey which you feel uncomfortable answering, you do not have to answer these questions. The information you give in the survey will be cross-checked with your prisoner record and a carbon monoxide machine to measure your smoking levels.

If you are randomised to the intervention group, you will then get the prisoner-led intervention over 6-weeks. The intervention will involve group sessions once a week which will be led by a trained prisoner. These group sessions will cover things like living a healthy lifestyle, goal setting, coping with relapses and advice on gym plans You will also be able to go to the trained prisoner on the wing if you want one-on-one support or advice. After the intervention has finished, you will be asked to complete the same survey you completed at the start of the research immediately after the intervention and then again 1, 3 and 6 months later. This is to see if your smoking, diet and physical activity levels have changed over time.

If you are randomised to the control group, you will not get the prisoner-led intervention. Instead you will receive the usual care. You will be asked to complete the same survey you completed at the start of the research another four times up to eight months after completing the first survey. This is to see if your smoking, diet and physical activity levels have changed over time.

5. Why have you been asked to take part?
You have been asked to take part in this study because you are a prisoner at [redacted] and have said you are interested in taking part.

6. Do you have to take part?
No. Taking part is voluntary and you are free to withdraw from the study at any point up until the data is analysed. If you decide to withdraw this will not affect your legal rights or the service you receive from the prison healthcare in any way. Withdrawal from the study can be made through the healthcare application system. If you withdraw, you do not have to give a reason. If you decide not to take part, this will not affect your legal rights or the service you receive from the prison healthcare in any way. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. An entry will be put in your medical notes saying that you have taken part in a research study.

7. Is the research confidential?
Yes, your involvement in the study will be completely confidential. However, if you do share any information relating to illegal acts, behaviour that is against the prison rules or behaviour that is potentially harmful to yourself and others, then such information will need to be shared with an appropriate agency. An entry will be made into your medical notes and the prison computer that you have taken part in a research study so that your prison GP is aware of this.

You need to be aware that if you are selected to get the prisoner-led intervention, there can be no guarantee that other prisoners in the intervention group will not disclose information discussed outside of the group sessions. Where we are made aware of any issues of bullying from taking part in these group sessions, we will take this very seriously and support people through health and prison support systems.

The completed surveys will be kept in a locked fireproof filing cabinet which only the research team has access to. The surveys will be destroyed after 5 years.

8. What are the benefits of taking part?

Taking part in the research will help us understand if a larger scale project evaluating the prisoner-led intervention can be done, and will let us begin to understand if the intervention can help to reduce smoking and improve diet and physical activity in prisoners.

9. What will happen to the results of the study?

The responses from the questions in the survey will be collated and used to see if the prisoner-led intervention has helped prisoners with reducing their smoking and improving their diet and physical activity. The findings will be reported to a range of people. This will include prisoners, staff working in prison, Government officials and other researchers. The research team will write up the results in a report and will present these findings in Journals and at conferences. You will be given a summary sheet of the findings if you are still in prison at the end of the research. If you are released from prison before the data is analysed and would like to know the results, we can post a summary of the research findings to you.

10. What happens if there is a problem or something goes wrong?

If you experience any distress or anxiety from taking part in the research, please put in an application to see Philippa Hearty who will be able to discuss these concerns with you, and where needed will refer you on to a support service. You can also put in an application to speak to other support services such as the prison doctor, mental health workers or the prison listeners.

If you wish to complain, or have any concerns about the way you have been approached or treated by members of staff or about any side effects you may have experienced due to being part of the research, please complete and submit a complaint form; these can be found on each of the prison wings or from Healthcare.

In the event that something does go wrong and you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against Spectrum CIC but you may have to pay your legal costs.

If you have any questions or want further details about the research, please complete an application form which you can find on the prisoner information desk on your wing, addressing the application to Philippa Hearty.

Thank you for taking time to read this information sheet.

Appendix 23 – Consent form for phase two

Identifying logos removed

Participant number:

CONSENT FORM

Title of Project: A study exploring if a prisoner-led intervention can help to reduce smoking and improve diet and physical activity in prisoners

Researcher: Philippa Hearty

Contact: Through the prison healthcare application system

If you agree with each point below, please sign your initials in the boxes

1. I confirm that I have read and understood the information sheet dated 19th July 2016, Version 3 for the above study. I have had the opportunity to consider the information and ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw from the study up until the data is analysed, without giving any reason – and without my medical care or legal rights being affected. ☐

3. I agree that any data collected about me as part of the study may be used, anonymously, in the presentation of the research. ☐

4. I agree to the researcher accessing my prison records via the database p-NOMIS for the purposes of the research evaluation. ☐

5. I agree for an entry to be placed in my medical notes and on the prison computer so that my prison GP is aware that I have taken part in a research study. ☐

6. I agree to the researcher taking my contact details so that they can complete the follow-up questionnaires with me if I am released from prison before completion of the study. ☐

7. I agree to the research team taking my address to post the summary of the study results if I expect to be released before completion of the study. ☐

8. I understand that my information may be shared if I disclose any information relating to illegal acts, behaviour that is against the prison rules or behaviour that is potentially harmful to myself and others. ☐

9. I understand that relevant sections of data collected during the study may be looked at by individuals from relevant regulatory authorities, where it is relevant to my taking part in this research. I give permission for these individuals to have such access. ☐

10. I agree to take part in the above study. ☐

Name in block capitals…….....

Signed……..
Date……..

Witnessed by (researcher)……..
Date……...

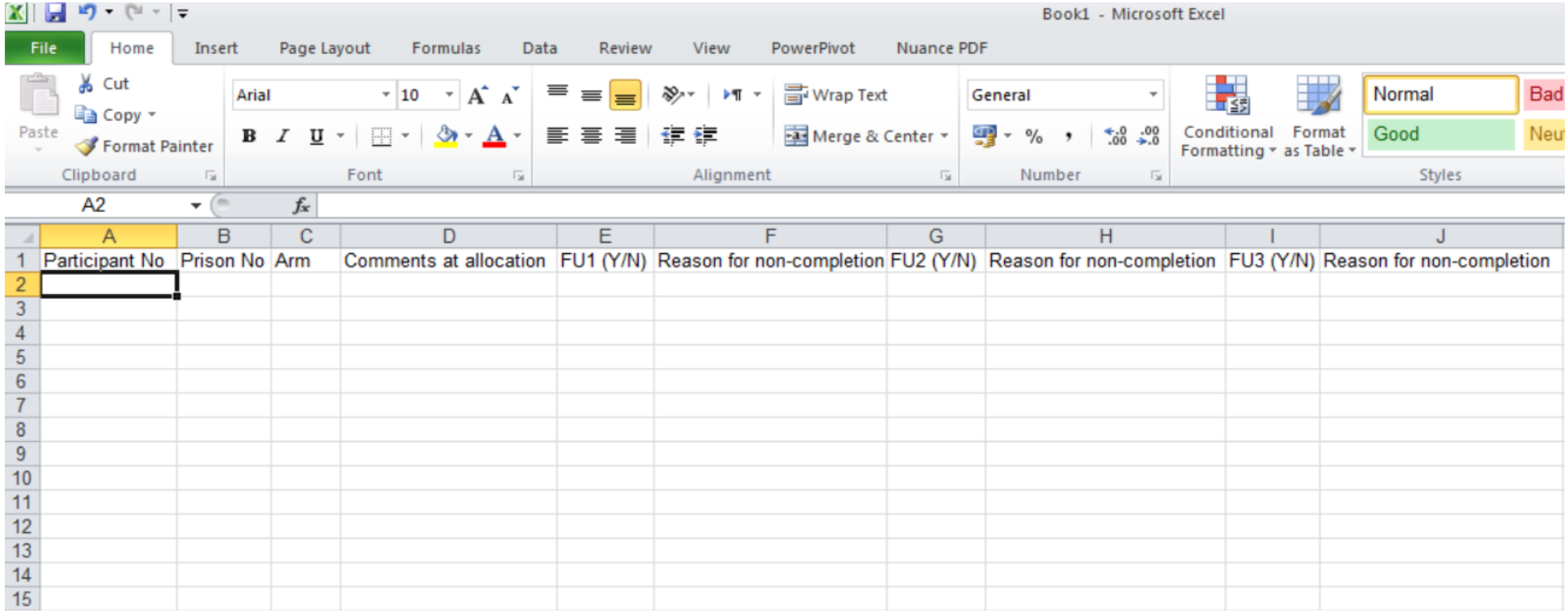
When completed, 1 copy to be kept by the participant; 1 copy to be kept by the researcher.

If you have any queries or want further details about the research, please complete an application form which you can find on the prisoner information desk on your wing, addressing the application to Philippa Hearty

Appendix 24 – Screening log

Screening Number	Initials of Potential Participant	Date of Consent (where agreed to take part)	Reason for non-participation (ineligibility or refusal)

Appendix 25 – Recruitment and follow-up spreadsheet



	A	B	C	D	E	F	G	H	I	J
1	Participant No	Prison No	Arm	Comments at allocation	FU1 (Y/N)	Reason for non-completion	FU2 (Y/N)	Reason for non-completion	FU3 (Y/N)	Reason for non-completion
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

Appendix 26 – Intervention fidelity checklist

Week One – Introduction Session

Intervention Component	Delivered (0 = No, 1 = Partially delivered, 2 = Delivered in full) – Provide reason if not delivered where possible
Introduce yourself to the group	
Explain what the intervention is trying to do and what it will involve	
Explain what is expected from the group	
Explain about CO monitoring	
Discuss the importance of living a healthy lifestyle	
Discuss stop smoking medications	
Explain about smoking, diet and physical activity diaries	
Provide a summary of the session	

Appendix 27 – Intervention acceptability questionnaire

Intervention Acceptability Survey

Participant number: Prison number:

This survey asks you a few questions about your views on the 6-week prisoner-led intervention.

1) How helpful did you find the intervention overall?				
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful
Please explain your reason for choosing this answer:				
2) To what extent do you agree or disagree with the following statements about the 6-week intervention;				
I learnt new things about smoking				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I learnt new things about physical activity				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I learnt new things about diet				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
The prisoners who delivered the intervention were friendly and easy to talk to				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I found the prisoners leading the sessions knowledgeable				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Please explain your reasons for choosing these answers:				

3) How helpful did you find the following parts of the intervention? If you did not receive any of the parts, please tick the not applicable option.

The session on smoking cessation					
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful	Not applicable
The session on physical activity					
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful	Not applicable
The session on diet					
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful	Not applicable
The prisoners who delivered the 6-week intervention					
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful	Not applicable
The stop smoking medication(s) prescribed to me					
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful	Not applicable
Please explain your reasons for choosing these answers:					

4) How successful do you think the intervention has been with the following;

Helping you to stop smoking				
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful
Helping you to improve your physical activity levels				
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful
Helping you to improve your diet				
Not at all helpful	A little helpful	Moderately helpful	Very helpful	Extremely helpful
Please explain your reasons for choosing these answers:				

5) What do you think the most successful parts of the intervention were?

6) What do you think the least successful parts of the intervention were?

7) What do you think can be done to make the intervention better?

8) Would you recommend the 6-week intervention to other prisoners?		
Yes	No	Not sure

9) Would you like the 6-week intervention repeated?		
Yes	No	Not sure

10) Do you have any further comments about the intervention?

Appendix 28 – Contamination questionnaire for control participants

1) Have you been told any information from the intervention/group sessions?

2) Have you been shown any of the health information leaflets from the intervention/group sessions?

3) Have you spoken to either of the peer-workers about your smoking, diet or physical activity?

4) Have you heard of any of the following terms; eat-well plate, cost-benefits analysis or if-then plans?

Appendix 29 – Contamination questionnaire for intervention participants

1) Have you spoken to anybody outside of the group sessions about what was discussed in the sessions (e.g. the health benefits of stopping smoking)?

2) Have you shown anybody outside of the group sessions any of the information leaflets or worksheets that you were given?

3) Have you spoken to anybody outside of the group sessions about your attempts to address your smoking, diet and physical activity?

Appendix 30 – Main survey

Participant Questionnaire

Prisoner number: _____ **Wing:** _____ **Date:** _____

Section 1 – About you

This section asks you questions about your background.

1) How old are you? _____ years old

2) How tall are you? _____ centimetres

3) How much do you weigh? _____ kilograms

4) How would you describe your ethnicity?

	White
	Mixed/Multiple Ethnic groups
	Asian/Asian British
	Black/African/Caribbean/Black British,
	Other (please state) _____

5) Where were you living prior to coming into prison?

	House/Flat rented by you or your partner
	House/Flat owned by yourself or partner
	Living with family/friends
	Temporary accommodation (e.g. hostel)
	Homeless/sleeping rough
	Other (please state) _____

6) Were you employed prior to coming into prison?

	Yes, as an employee
	Yes, self-employed
	No

7) Is this your first time in prison?

	Yes → Go to section 2
	No

8) How long were you in prison for previously? _____ years _____ months

Section 2 – Your General Health

This section asks questions about your general health.

9) In general would you say your health is:

	Excellent
	Very good
	Good
	Fair
	Poor

10) Compared to one year ago, how would you rate your health in general now?

	Much better now than one year ago
	Somewhat better now than one year ago
	About the same
	Somewhat worse now than one year ago
	Much worse now than one year ago

11) Do you have any long-standing physical or mental health conditions?

	Yes (tick all that apply in the box below)
	No → Go to question 13

Options;

	Hypertension
	Depression
	Asthma
	Diabetes
	Coronary heart disease
	Chronic kidney disease
	Hyperthyroidism
	Stroke
	Chronic Obstructive Pulmonary Disease
	Cancer
	Mental health
	Heart failure
	Epilepsy
	Dementia
	Other (please state) _____

12) Are you currently prescribed medications to manage any of these conditions? (tick all that apply in the bow below)

	Hypertension
	Depression
	Asthma
	Diabetes
	Coronary heart disease
	Chronic kidney disease
	Hyperthyroidism
	Stroke
	Chronic Obstructive Pulmonary Disease
	Cancer
	Mental health
	Heart failure
	Epilepsy
	Dementia
	Other (please state) _____
	Not prescribed any medications

13) Do you believe that lifestyle changes (such as diet, physical activity and smoking cessation) can help to manage one or more of the following conditions; heart disease, diabetes, or cancer?

	Strongly disagree
	Disagree
	Neither agree nor disagree
	Agree
	Strongly agree

Section 3 – Your Smoking

This sections asks questions about your smoking.

14) Did anyone smoke inside any of the following places that you have been to in the past 30 days?

	Your cell
	A friends cell
	Your workshop
	Your education classroom
	Healthcare holding cell
	Other (please state)_____

15) On a typical day, how long are you exposed to other people's smoke?

	0 minutes per day
	1 – 30 minutes per day
	31 minutes – 1 hour per day
	More than 1 hour per day

16) Do you currently smoke any tobacco products such as cigarettes or roll-ups?

	Yes
	No → Go to question 24

17) Do you currently smoke tobacco products daily?

	Yes
	No → Go to question 19

18) On average, how many of the following do you smoke each day?

_____ a. Manufactured cigarettes
_____ b. Hand-rolled cigarettes
_____ c. Other (please state)_____

[If you are a daily smoker and answered question 18, go to question 20]

19) On average, how many of the following do you smoke each week?

_____ a. Manufactured cigarettes
_____ b. Hand-rolled cigarettes
_____ c. Other (please state)_____

20) How old were you when you first started smoking? _____ years old

21) During the past 12 months, have you tried to stop smoking?

	Yes
	No

22) Which of these statements best describes how you feel about your smoking?

	Not ready to quit at all
	Not ready to quit within the next 6 months
	Thinking about quitting within the next 6 months
	Ready to quit now

23) What do you think are the main barriers that prevent you from stopping smoking? (tick all that apply)

	It is too difficult
	Boredom
	Stress
	I am not sure how
	I have no motivation to stop smoking
	I am worried about gaining weight
	I don't have enough support
	People around me smoking
	There are no good reasons to quit
	Other (please state)_____

24) If you are not a current smoker, in the past have you ever smoked daily? [If you are a current smoker, go to question 25]

	Yes → How long ago did you stop smoking? _____ years_____ months
	No

25) Based on what you know or think, does smoking cause any of the following?

	Yes	No	Not sure
Stroke			
Lung disease			
Cancer			
Heart attack			

26) Based on what you know or think, does breathing smoke from other people's cigarettes (second-hand smoke) cause any of the following in adults?

	Yes	No	Not sure
Lung cancer			
Heart disease			
Breathlessness			
Coughing			
Wheezing			
Asthma symptoms to worsen			

27) Based on what you know or think, does breathing smoke from other people's cigarettes (second-hand smoke) cause any of the following in children?

	Yes	No	Not sure
Breathlessness			
Coughing			
Wheezing			
Asthma symptoms to worsen			
Cancer			
Ear infections			
Sudden infant death syndrome			

28) How strongly do you agree or disagree with smoke-free rules in the following places?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Prison					
Public transport					
At home					
At work					
At schools					

Section 4 – Your Diet

This sections asks questions about your diet.

29) How many days per week do you usually eat or drink each of the following items?

	0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
Vegetables								
Fruits								
Whole grains (e.g. whole-grain cereal and rice)								
Sweets								
Biscuits and cakes								
Sugary drinks								
High-fat foods (e.g. fried food, butter)								
High-salt foods (e.g. ham, cheese)								

30) On the days you eat fruit, on average how many portions of fruit do you eat?

	I do not eat fruit
	1 portion
	2 portions
	3 portions
	4 portions
	5 or more portions

31) On the days you eat vegetables, on average how many portions of vegetables do you eat?

	I do not eat vegetables
	1 portion
	2 portions
	3 portions
	4 portions
	5 or more portions

32) Do you add salt to your food right before you eat it or as you are eating it?

	Yes, most of the time
	Yes, sometimes
	No

33) How many days in the past week did you consume a snack?

	0 days
	1 day
	2 days
	3 days
	4 days
	5 days
	6 days
	7 days

34) When you have snacks or drinks, which do you normally have? [tick all that apply]

	I do not have snacks or drinks
	Crisps
	Nuts
	Fruit
	Sweets
	Biscuits
	Cakes
	Ice-cream
	Diet soft drinks
	Regular soft drinks
	Fruit juice
	Energy drinks
	Other (please state)_____

35) Overall, would you say that your diet is;

	Very healthy
	Fairly healthy
	Fairly healthy
	Very unhealthy

36) Do you currently avoid eating any of the following foods?

	Yes	No	Not sure
High-fat foods			
High-salt foods			
High-sugar foods			

37) Do any of the following prevent you from eating healthily? [tick all that apply]

	Unsure of which foods are healthy/unhealthy
	Healthy options expensive
	Lack of choice
	I have no motivation to eat healthily
	I don't have enough support
	There are no good reasons to eat healthily
	It is too difficult
	Taste of food
	Other (please state)_____

38) In total, how many portions of fruit and vegetables should you eat a day?

	At least 1 portion
	At least 2 portions
	At least 3 portions
	At least 4 portions
	At least 5 portions
	At least 8 portions
	Not sure

39) Do you think any of the following eating behaviours are related to developing major health problems or diseases?

	Yes	No	Not sure
Low intake of fruit and vegetables			
Low intake of fibre			
High intake of sugar			
High intake of salt			
High intake of fat			

40) Do you currently eat 5 or more portions of fruit and vegetables a day?

	Yes
	No
	Not sure

41) Do you believe that what you eat or drink can make a difference in your chances of getting the following illnesses?

	Yes	No	Not sure
Heart disease			
Diabetes			
Cancer			
High cholesterol			

Section 5 – Your levels of physical activity

This sections asks questions about your levels of physical activity.

42) Think about all the vigorous physical activities that you did in the past 7 days. Vigorous physical activities are activities that take hard physical effort and make you breathe much harder than normal. When doing these activities, you would be unable to hold a conversation with somebody or talk more than a few words without stopping to catch your breath. Examples of vigorous activity may include heavy lifting, running and fast bicycling. Think only about those physical activities that you did for at least 10 minutes at a time.

During the last 7 days, on average how many days did you do vigorous physical activities?_____ day(s) per week

[If no vigorous physical activity go to question 44]

43) How much time did you usually spend doing vigorous physical activities on one of those days?
_____ hours per day _____ minutes per day

44) Think about all the moderate physical activities that you did in the past 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. When doing these activities, you'd be able to talk but unable to sing along to the words of a song. Examples of moderate physical activity may include carrying light loads and bicycling at a regular place. Do not include walking. Think only about those physical activities that you did for at least 10 minutes at a time.

During the last 7 days, on how many days did you do moderate physical activities?
_____ day(s) per week

[If no moderate physical activity go to question 46]

45) How much time did you usually spend doing moderate physical activities on one of those days?
_____ hours per day _____ minutes per day

46) Think about the time you spent walking in the past 7 days. This includes during association time, out on the exercise yard, and any other walking that you might do for recreation, sport, exercise, or leisure.

During the last 7 days, on how many days did you walk for at least 10 minutes at a time?
_____ day(s) per week

[If no walking go to question 48]

47) How much time did you usually spend walking on one of those days?
_____ hours per day _____ minutes per day

48) Think about how much time you spent sitting during the last 7 days. This includes time spent at workshop, in education, whilst in your cell reading or watching television.

During the last 7 days, how much time did you usually spend sitting on one of those days?
_____ hours per day _____ minutes per day

49) There are official guidelines with recommendations for levels of physical activity amongst adults your age. Which of the following statements best describes you?

	I know what the recommended levels of physical activity are for adults my age
	I have heard about the guidelines but I'm not sure what the recommended levels of physical activity are for adults my age
	I have not heard about the recommended levels of physical activity for adults my age

50) How many days a week do you think adults your age should do moderate physical activity for?
_____ days

51) On each of these days, for how many minutes a day should adults perform moderate physical activity for it to be beneficial for their health?
_____ minutes

52) Do you currently do 150 minutes or more of physical activity per week?

	No, and I do not intend to in the next 6 months
	No, but I intend to in the next 6 months
	No, but I intend to in the next month
	Yes, and I have been, but for less than 6 months
	Yes, and I have been for more than 6 months

53) Are you currently trying to reduce your time spent sedentary (e.g. watching TV and other sitting activities) each day outside of work and education?

	No, and I do not intend to in the next 6 months
	No, but I intend to in the next 6 months
	No, but I intend to in the next month
	Yes, and I have been, but for less than 6 months
	Yes, and I have been for more than 6 months

54) How much do you agree or disagree with each of the following statements?

Participating in regular physical activity on a weekly basis can;

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Not sure
Help people lose weight						
Reduce risk of disease						
Help reduce depression						
Strengthens muscles						
Improve heart and lung fitness						

55) Do any of the following prevent you from getting physical activity? [tick all that apply]

	Don't enjoy it
	Lack of motivation
	No time
	No energy
	Nobody to do physical activity with
	Limited access to gym
	Lack of equipment
	Usually too tired to exercise
	Lack of knowledge on how to do physical activity
	Poor health
	Worry about injuring myself
	It's hard work
	It's boring
	I am too overweight
	No suitable places to do physical activity
	Too much time spent behind cell door
	Other (please state) _____

Appendix 31 – WEMWBS survey

Section 6 – Your wellbeing

This section asks you questions about your general wellbeing.

56) In the table below are some statements about thoughts and feelings. Please tick the box that describes your experience of each over the last two weeks.

Statements	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future					
I've been feeling useful					
I've been feeling relaxed					
I've been feeling interested in other people					
I've had energy to spare					
I've been dealing with problems well					
I've been thinking clearly					
I've been feeling good about myself					
I've been feeling close to other people					
I've been feeling confident					
I've been able to make up my own mind about things					
I've been feeling loved					
I've been interested in new things					
I've been feeling cheerful					

Warwick-Edinburgh Mental Well-being Scale (WEMWBS) © NHS Health Scotland, University of Warwick and University of Edinburgh, 2006, all rights reserved

End of questionnaire.

Thank you for taking the time to complete this questionnaire.

Appendix 32 – Extra tables

Table 1: Intervention fidelity for week 1

Intervention component	**Prison A AM group**	**Prison A PM group**	**Prison B AM group**	**Prison B PM group**
Introduce yourself to the group	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain what the intervention is trying to do and what it will involve	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain what is expected from the group	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain about CO monitoring	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discuss the importance of living a healthy lifestyle	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discuss stop smoking medications	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain about smoking, diet and physical activity diaries	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Provide a summary of the session	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Percentage of components delivered in full as intended	100%	100%	100%	100%
Percentage of components delivered partially	0%	0%	0%	0%
Percentage of components not delivered	0%	0%	0%	0%

Table 2: Intervention fidelity for week 2

Intervention component	**Prison A AM group**	**Prison A PM group**	**Prison B AM group**	**Prison B PM group**
Do a cost-benefits analysis of changing behaviour	Delivered in full	Partially delivered	NA	NA
Reflect on behaviour change diaries and explain about goal-setting	Partially delivered	Partially delivered	NA	NA
Discuss setting a quit date	Delivered in full	Delivered in full	NA	NA
Get commitment from the group	Not delivered	Not delivered	NA	NA
Provide a summary of the session	Delivered in full	Delivered in full	NA	NA
CO check via monitor	Partially delivered	Partially delivered	NA	NA
Percentage of components delivered in full as intended	50%	33.35	NA	NA
Percentage of components delivered partially	33.3%	50%	NA	NA
Percentage of components not delivered	16.7%	16.7%	NA	NA

Table 3: Intervention fidelity for week 3

Intervention component	**Prison A AM group**	**Prison A PM group**	**Prison B AM group**	**Prison B PM group**
Discuss tobacco dependence	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Identify triggers and ways of dealing with these triggers	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain the importance of changing routine	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discuss the influence of social networks	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discussion of lapses and relapses	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discuss CO monitoring	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Provide a summary of the session	Delivered in full	Delivered in full	Not delivered	Delivered in full
CO check via monitor	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Percentage of components delivered in full as intended	87.5%	87.5%	75%	87.5%
Percentage of components delivered partially	12.5%	12.5%	12.5%	12.5%
Percentage of components not delivered	0%	0%	12.5%	0%

Table 4: Intervention fidelity for week 4

Intervention component	**Prison A AM group**	**Prison A PM group**	**Prison B AM group**	**Prison B PM group**
Check on how the group have got on with smoking cessation	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain that this session will focus on physical activity	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain the benefits of being active	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain what the recommended levels of physical activity are	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Identify barriers and facilitators to being physically active in prison	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discuss physical activity goal-setting	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Provide a summary of the session	Delivered in full	Delivered in full	Delivered in full	Delivered in full
CO check via monitor	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Percentage of components delivered in full as intended	62.5%	62.5%	62.5%	62.5%
Percentage of components delivered partially	37.5%	37.5%	37.5%	37.5%
Percentage of components not delivered	0%	0%	0%	0%

Table 5: Intervention fidelity for week 5

Intervention component	**Prison A AM group**	**Prison A PM group**	**Prison B AM group**	**Prison B PM group**
Check on how the group have got on with smoking cessation and physical activity	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Explain that this session will focus on diet	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Explain the benefits of healthy eating	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discuss what a healthy diet consists of	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Identify barriers and facilitators to eating a healthy diet in prison	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Discuss healthy diet goal-setting	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Provide a summary of the session	Delivered in full	Delivered in full	Delivered in full	Delivered in full
CO check via monitor	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Percentage of components delivered in full as intended	62.5%	62.5%	62.5%	62.5%
Percentage of components delivered partially	37.5%	37.5%	37.5%	37.5%
Percentage of components not delivered	0%	0%	0%	0%

Table 6: Intervention fidelity for week 6

Intervention component	**Prison A AM group**	**Prison A PM group**	**Prison B AM group**	**Prison B PM group**
Check and advise on smoking	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Check and advise on physical activity	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Check and advise on diet	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Provide a summary of the session	Delivered in full	Delivered in full	Delivered in full	Delivered in full
Thank the group for taking part in the intervention	Delivered in full	Delivered in full	Delivered in full	Delivered in full
CO check via monitor	Partially delivered	Partially delivered	Partially delivered	Partially delivered
Percentage of components delivered in full as intended	50%	50%	50%	50%
Percentage of components delivered partially	50%	50%	50%	50%
Percentage of components not delivered	0%	0%	0%	0%

Table 7: Number of fruit and vegetable portions consumed by participants per day

	Baseline		Follow-up 1		Follow-up 2		Follow-up 3	
	Intervention (n=40)	Control (n=40)	Intervention (n=36)	Control (n=32)	Intervention (n=35)	Control (n=34)	Intervention (n=29)	Control (n=24)
Number of fruit portions consumed per day								
0	2 (5%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	2 (5.9%)	1 (3.4%)	0 (0%)
1	19 (47.5%)	16 (40%)	15 (41.7%)	17 (53.1%)	13 (37.1%)	15 (44.1%)	11 (37.9%)	9 (37.5%)
2	11 (27.5%)	16 (40%)	14 (38.8%)	11 (34.4%)	17 (48.6%)	11 (32.4%)	14 (48.4%)	7 (29.2%)
3	6 (15%)	5 (12.5%)	5 (13.9%)	4 (12.5%)	5 (14.3%)	5 (14.7%)	2 (6.9%)	5 (20.8%)
4	2 (5%)	1 (2.5%)	2 (5.6%)	0 (0%)	0 (0%)	1 (2.9%)	0 (0%)	3 (12.5%)
5	0 (0%)	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3.4%)	0 (0%)
Number of vegetable portions consumed per day								
0	1 (2.5%)	6 (15%)	1 (2.8%)	2 (6.3%)	3 (8.6%)	6 (17.6%)	1 (3.4%)	1 (4.2%)
1	17 (42.5%)	17 (42.5%)	14 (38.8%)	16 (50%)	10 (28.6%)	10 (29.4%)	11 (37.9%)	7 (29.2%)
2	17 (42.5%)	15 (37.5%)	18 (50%)	11 (34.4%)	16 (45.7%)	16 (47.1%)	10 (34.5%)	14 (58.3%)
3	4 (10%)	2 (5%)	2 (5.6%)	2 (6.3%)	4 (11.4%)	2 (5.9%)	6 (20.8%)	2 (8.3%)
4	1 (2.5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
5	0	0 (0%)	1 (2.8%)	1 (3.1%)	2 (5.7%)	0 (0%)	1 (3.4%)	0 (0%)