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Using Participatory Methods To Improve Health Literacy Of Mothers In Northern
Nigeria: An Action Research Project

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Declaration

I certify that this thesis submitted for the degree of Doctor of Philosophy is the result of my own research, except where otherwise acknowledged. No portion of the work presented in this thesis has been submitted for another degree or qualification to this, or any other, university or institution.

Sanusi Abubakar

Abstract

Background:

Maternal and neonatal health is an important global public health priority. Outcomes remain poor, especially in rural, peri-urban or marginalised communities. Public health interventions and conventional health promotion programmes are often challenging to implement and can fail to lead to sustainable change. Research suggests that participation influences literacy; which in turn is more likely to lead to sustainable health-related changes especially in marginalised settings, but there are challenges to implementation.

Aim:

To assess whether an action research approach using a mix of participatory methods can improve the health literacy of women living in peri-urban and rural areas of Northern Nigeria

Methods:

Three communities were recruited into the project; one as comparison and two in which women's groups were established. The research project had three stages: designing, implementing and evaluating the complex (health promotion) intervention. A range of participatory approaches (Community-Based Participatory Research, Auto-diagnosis, Most Significant Change) were adopted. Qualitative methods including interviews, focus group discussions, storytelling, group discussions and visual methods were used during group development; and to explore mechanisms and factors that determine the development and impact of women's groups.

Findings:

The planned transition from facilitator-led to a peer-led women's group was achieved by women's group members during the project's duration. Evaluation of the complex process of co-designing and co-implementing this complex intervention showed that peer-led participatory learning sessions with participatory visual methods were feasible and were used effectively by groups in addressing maternal and neonatal danger signs and promotion of healthy nutrition.

Conclusion:

Action research approach and combination of participatory methods enabled the development of women's groups with the potential to empower women with knowledge and skills for local maternal health actions. Further work is needed to understand whether groups are sustainable and can have a direct impact on maternal and neonatal morbidity and mortality over time.

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Conference presentations in support of this thesis

1) Abubakar S, Goyder EC, Hock ES, Saddiq MI, Jones G. (2015). Improving Maternal Health Literacy through Participatory Approaches with Women Groups in Rural Northern Nigeria: A Report of the Preliminary Inception Phase at the 1st ScHARR Global Health Forum November 19, 2015, ICOSS (Interdisciplinary Centre of the Social Sciences), University of Sheffield. (Oral Presentation)

2) Abubakar S, Goyder EC, Hock ES, Saddiq MI, Jones G. (2016). Improving Maternal Health Literacy through Participatory Approaches with Women Groups in Rural Northern Nigeria: Findings from the Preliminary Phase at the ScHaRR (School of Health and Related Research) on November 25, 2016. (Oral Presentation)

3) Abubakar S, Goyder EC, Hock ES, Saddiq MI, Jones G. (2017). Improving Maternal Health through Community Based Participatory Research with Women Groups in Rural Northern Nigeria at the 2017 World Summit on Social Accountability/Network: TUFH Annual Meeting, presented by The Network: Towards Unity for Health (TUFH), Hammamet, Tunisia, 8-12 April 2017. (Thematic Poster Presentation)

List of Abbreviations and Acronyms

AIDS	Acquired Immune Deficiency Syndrome
AKTH	Aminu Kano Teaching Hospital
AKTH - HREC	Aminu Kano Teaching Hospital - Health Research Ethics Committee
ANC	Antenatal Care
ANDROID (phones)	Mobile phone operating system (software developed by Google)
BEKHA-HIV	Brief Estimate of Health Knowledge and Action – HIV Version
CAB	Community Advisory Board
CBPR	Community Based Participatory Research
CHC	Comprehensive Health Centre
CINAHL	Cumulative Index to Nursing and Allied Health Literature
DfID	Department for International Development
FGD	Focus Group Discussion
GCSE	General Certificate of Secondary Education
GSM (mobile phones)	Major radio system used in cell phones (Global System for Mobiles)

HALS	Health Activity Literacy Scale
HLS	Health Literacy Skills
HIV	Human Immunodeficiency Virus
ICPD	International Conference on Population and Development
ICT	Information, Communication Technology
id	Identification
IGA	Income Generating Activities
IHVN	Institute of Human Virology - Nigeria
KEC	Kano Emirate Council
KII	Key Informant Interview
LGA	Local Government Area
LMICs	Low and Middle-Income Countries
MDGs	Millennium Development Goals
MNCH	Maternal Newborn and Child Health
MMR	Maternal Mortality Ratio
MRC	Medical Research Council
MSC	Most Significant Change

MSc	Masters of Science
NDHS	National Demographic and Health Survey
NGO	Non-Governmental Organisation
NGT	Nominal Group Technique
NMR	Neonatal Mortality Ratio
PAR	Participatory Action Research
PHC	Primary Health Care or Primary Health Clinic
PhD	Doctor of Philosophy
PVM	Participatory Visual Methods
REALM	Rapid Estimate of Adult Literacy in Medicine
ScHaRR	School of Health and Related Research
SDGs	Sustainable Development Goals
SDOH	Social Determinants of Health
SN	Serial Number
SSC	Stories of Significant Change
TBA	Traditional Birth Attendant
TOFHLA	Test of Functional Health Literacy in Adults
UNFPA	United Nation Fund for Population Activity

UoS	University of Sheffield
UK	United Kingdom
US/USA	United States of America
WG	Women's Group
Whatsapp	Social Media Application (Mobile phone based software)
WHO	World Health Organization

Glossary of Some Hausa Terms

- Awo - Antenatal care - is the health facility based care that pregnant women receive before giving birth
- Boka - Traditional animists, usually male, who use herbs, inanimate objects, animals or animal parts, invocation of spirits or jinn for the treatment of physical or mental ailments
- Dagaci - The traditional ward head in the Kano Emirate Council
- Hakimi - The traditional district head in the Kano Emirate Council
- Humra - Locally made perfume
- Imam - Islamic teacher who traditionally leads congregational prayers
- Islamiyya - Local school that teaches Islamic Knowledge
- Kayi - The peri-urban study community located at the fringe of Panshekara Town in Kumbotso LGA
- Kumbotso town - A town located within Kumbotso LGA, Kano, Nigeria. It is also the LGA Headquarters. The rural study and comparison communities are located within its jurisdiction
- Lafiya - The word with the closest meaning to health, but has very

broad meaning that is closer to the concept 'balance' in English. For example, there can be *lafiya* of the body (absence of disease) or *lafiya* of the town (peace) and so on.

Layu	-	Amulets
Mai Unguwa	-	The traditional village head in the Kano Emirate Council
Mallam	-	An honorific title for men or a teacher of Islamic/Quranic Knowledge
Masu gyaran Kashi	-	Traditional bone setters, mostly local males who treat or set bone fractures
Mayu	-	Local term for witches/wizards who are believed to have the ability to “steal” souls; also believed to cause or cure some illnesses
Panshekara town	-	A town located within Kumbotso LGA, Kano, Nigeria. The peri-urban community is located on the fringe of Panshekara
Rubutu	-	A charcoal based ink solution prepared by washing a wooden writing board inscribed with therapeutic verses from the Qur'an
Sadaqa	-	Act of Charity (in cash or in kind)
Sarkin Fulani	-	Literally means the traditional leader of the Fulani tribe (in Kumbotso area). Also historically, an additional

		appellation to the title of the Dagaci (ward head) of Kumbotso town
Sarkin Kano	-	The Emir of Kano - the overall traditional ruler of Kano and head of the Kano Emirate Council
Shawara, Amosani	Basir, -	No English equivalents – (each of these is a container word for constellations of symptoms such as yellowness of the eyes, constipation, fever, generalised body weakness, anal bleeding and piles)
Sunnah	-	Teachings of the Prophet of Islam
Tofi	-	Blowing of a verse on a part of the body affected or into water that is then drunk-believed to have spiritual and healing powers
Tsamawa		The rural control community located within the jurisdiction of Kumbotso
Tudun Kaba		The rural study community located within the jurisdiction of Kumbotso
Turare	-	Inhalation of medicinal vapours from a steaming mixture or smoke from a fire (local incense)
Unguwar zoma	-	Usually older females who attend deliveries. Synonymous with traditional birth attendants. They are among the main traditional custodian of ailments occurring during pregnancy, delivery, postpartum and neonatal periods

- Vaseline - Locally made petroleum jelly for use as a skin cream or oily emollient (US tradename used for local product)
- Wanzamai - Male traditional barbers - who also give out local remedies and also perform a number of traditional surgical procedures such as blood cupping, removal of the uvula, cutting of the umbilical, female/male circumcision, local surgical extension of the vaginal orifice in cases of obstructed labour and other skin incisions for medicinal purposes
- Yan bori - A subset of male and female traditional animists who belong to the 'yan bori' cult; claiming to be possessed by spirits/jinns, through which they provide treatment for a variety of ailments
- Zaki - “Show” – when the plug of mucus from a pregnant woman cervix comes away as a sign that labour is about start

Chapter One: Introduction

Maternal and neonatal ill - health is a major public health priority especially in low and middle-income countries (LMICs) such as Nigeria; particularly and disproportionately affecting poor marginalised peri-urban and rural communities (NDHS, 2013). These poor maternal and neonatal indices persist despite the current availability of technologies and high impact interventions for almost all the known (biological) causes of maternal and newborn diseases. The social determinants of health have very important roles to play in averting maternal and neonatal deaths and ill health (Nutbeam, 2000); however these factors are largely given lesser priority or sometimes totally ignored.

There is potential for learning or adapting from newly evolving concepts in the fields of health promotion together with existing concepts from health psychology and participatory research approaches which can be blended to provide sustainable and equitable solutions that improve maternal health literacy and may thereby contribute to saving the lives of mothers and newborns in poor communities.

Research on health literacy concepts, tools and interventions or applications have been largely conducted in high income countries settings (Mårtensson and Hensing, 2012); and the findings from these indicate that improving health literacy of people can have a positive effect on their health status. However, few research studies on health literacy have been conducted in LMICs such as Nigeria.

This thesis explores the feasibility, acceptability and effectiveness of using a mix of participatory research methods to develop women's groups in northern Nigeria.

Participatory approaches use action-research oriented methods that are time consuming to design and implement but are generally more beneficial, acceptable and sustainable in the longer term because they enhance the chances of better community acceptance or ownership,

and uptake as well as sustainability of the intervention (Gibbon, 2002). However more research needs to be conducted on whether such approaches can be used effectively to improve maternal health literacy which ultimately can influence maternal and newborn health.

The use of participatory research approaches especially in the context of LMICs of Africa needs to be staged carefully because of deep rooted problems related to culture, gender and weak democratic institutions within these settings; such environments may find participatory research approaches as challenging to the local power structure and status quo. My research project worked with women living in rural and peri-urban communities of Northern Nigeria to co-develop, co-implement and evaluate health literacy interventions using participatory research approaches; to promote their health literacy skills and (ultimately) improve maternal and neonatal health. The study also explored the feasibility, acceptability and effectiveness of using participatory research approaches within the context of Northern Nigeria.

The structure of the thesis is outlined below

Chapter 1 is the introductory chapter which provides a general introduction and broad outline of the structure of the thesis as well as the research questions that this study addresses.

Chapter 2 is the literature review chapter where the literature and existing evidence for the main concepts and methods of the thesis are discussed in more detail.

Chapter 3 is the scoping review chapter which is dedicated to reviewing the main intervention (participatory women's groups approach) used in improving maternal health literacy in the thesis.

Chapter 4 provides details of the study methodology as well as a general description of Northern Nigeria and the overall research methods and processes used in the thesis.

The rest of the thesis is structured and reported according to how the fieldwork of the Maternal Health Literacy Research project was designed, implemented, evaluated before bringing together the overall findings and discussing their implications in the final chapter.

Chapter 5 provides details of the analysis, descriptive findings and lessons learnt from the design or inception phase of the Maternal Health Literacy Research Project.

Chapter 6 provides details of the analysis, descriptive findings and lessons learnt from the implementation phase of the Maternal Health Literacy Research Project.

Chapter 7 provides details of the evaluation phase of the Maternal Health Literacy Research Project; including the findings from the formative evaluation of the implementation phase activities as well as the overall (qualitative) impact evaluation of the research project using a participatory monitoring and evaluation method.

Chapter 8 is the discussion of the study findings and their significance, together with what the study adds to existing literature, the strengths and limitations of the study, implications for policy, practice and research, and an overall conclusion.

The thesis framework was structured in this manner so that the analysis, findings and lessons learnt from a preceding phase can be clearly presented and linked to the next phase. This is important because the 'research participants' influence or have inputs into how each of the phases of the research project is conducted; with the findings and lessons learnt from the preceding phase used in influencing the successive phases in keeping with the tradition of participatory research approaches.

Main Research Question

Can an action research project approach using a mix of participatory research methods be used to build the health literacy of, and empower local women who are largely vulnerable, illiterate, living in poor, underserved peri-urban and rural areas of Northern Nigeria?

Research Sub - Questions

1. How can health literacy interventions to improve the maternal health of women be co-designed using participatory research methods in Northern Nigeria?

2. How can health literacy interventions to improve the maternal health of women be co-implemented using participatory research methods in Northern Nigeria?

3. How can the mechanisms by which these health literacy interventions influence the maternal health of women in Northern Nigeria be described?

4. How can the co-produced health literacy interventions that influence the women's groups be evaluated using participatory research methods in Northern Nigeria?

Chapter Two: Literature Review

2.1. Preamble

This chapter provides a detailed review of the concepts, approaches, methods and fields that were utilised in my thesis and the justifications for engaging with them. Specifically, there is a description of the concepts of health literacy, critical health literacy, maternal health literacy and participatory research approaches; including their evolution and utility with a view to understanding how to co-design, co-implement and evaluate health literacy interventions to improve maternal health literacy in Northern Nigeria.

There is also a review of related concepts in the field of community health psychology which support an understanding of the mechanisms or pathways through which health interventions may work in promoting critical health literacy amongst community members. In addition, the concepts of therapeutic landscape and indigenous knowledge related to maternal health were also examined with a view to understanding factors influencing maternal health seeking and health related practices in Northern Nigeria.

2.2. General literacy

General literacy is an important but complex concept to grasp Nutbeam (2009). However, general literacy is a relatively well known proxy social determinant of health (especially for maternal and child health) (Babalola and Fatusi, 2009). Literacy is used not only to refer to reading, writing and comprehension ability, but also to describe a person's knowledge of a particular subject or field (Peerson and Saunders, 2009). And in this context, usage of the term literacy implies a kind of "adeptness" of individuals to navigate identified contexts using their acquired or innate cognitive and social skills in any identified setting. Zarcadoolas et al. (2005), have suggested types of literacy that individuals need to have in order to prevent diseases or maintain their health; and these include fundamental, science, civic and cultural

literacy respectively. In addition, studies have documented an indirect relationship between literacy and maternal health (Dewalt and Hink, 2009), as well as between low functional health literacy and conditions such as asthma and self care (Williams et al. 1998). In summary, being literate is generally important because literate persons are more likely to possess competencies that will enhance their chances of being healthy when compared to illiterate individuals. However this may not always be true for all contexts.

2.3. Definitions of health literacy

There are a variety of debates among the proponents of health literacy over the definition of the health literacy concept; including discussions regarding how to measure and apply it. However, there is some evidence regarding the effect of health literacy on the health of individuals and populations as shown by different studies from around the world (Mårtensson and Hensing, 2012). The different assumptions underpinning these varied descriptions of the health literacy concept may explain why there is a variety of definitions of health literacy found in the literature.

One of the earliest mention of health literacy that appear in the literature was by (Simmonds 1974, cited in Ratzan, 2001, p.21) as “discussion of health education as a policy issue affecting the health system”. Nutbeam (1998) proposes a broad public health definition of health literacy where it is seen as a desired outcome of health promotion interventions . Other definitions of health literacy appear to be limited to the ability to navigate clinical settings, for example Institute of Medicine report, Ratzan and Parker (2000). Nielsen-Bohlman et al. (2004, p.37) define “health literacy as the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions”. Some authors have proposed that the usage of the term 'health literacy' within clinical settings be replaced by “medical literacy” (Peerson and Saunders 2009).

The definitions of health literacy in the literature generally address the "capacity" or "competency" and/or skills of individuals to process and navigate healthcare services as well as take care of their health for example (Ratzan and Parker, 2000; Institute of Medicine, 2004; Healthy People, 2010). On the other hand, some definitions of health literacy also include a social and empowerment perspective in their definitions (Zarcadoolas et al. 2005; Nutbeam, 2000).

WHO 2015 defines health literacy as “the personal characteristics and social resources needed for individuals and communities to access, understand, appraise and use information and services to make decisions about health” (Dodson et al. 2015, p.11). The inclusion of the social perspective within the definition of health literacy by the WHO helps in moving the definition of health literacy from an individual to a population focus. It also recognises the fact that marginalised groups such as women in LMICs are heavily influenced by their social context which constraint their access to information and decision making (Dodson et al. 2015, p.11). Additional health literacy definitions that appear in the literature are provided in Appendix I of this thesis.

Tones (2002) has criticised the health literacy concept as akin to “putting old wine in new bottles” (p.289); he argued that the health literacy discourse is a distraction because the concept is simply a re-packaging of already existing constructs (such as empowerment, critical analysis and critical consciousness raising) from health promotion and critical theory. A case has been generally made for adopting the critical health literacy definition because it is both "a skill involving a critical understanding of health determinants, self-efficacy (the confidence/capacity to act), an outcome, and an asset to be developed as a consequence of health promotion" (Wills, 2015, p.4).

Generally, the concept of health literacy have gained acceptance amongst health promotion practitioners (Levin-zamir and Peterburg, 2001; Kickbusch, 2004; Kickbusch, 2001; Nutbeam and Kickbusch, 2000; Nutbeam, 2000; Wang, 2000). Nutbeam (2000) further categorised health literacy into functional, interactive and critical health literacy with the latter being the ultimate goal.

The potential outcomes obtainable using the critical health literacy definition by Nutbeam (2000) include social and empowerment dimensions. Social mobilization and community development programmes have a long history of stimulating group empowerment by promoting critical consciousness among participants in various health, development or education projects in LMICs. In this regard, critical health literacy has similar understandings with the participatory research approach paradigm which strives to empower people through their participation and reflections on their actions (Baum et al. 2006).

2.4. Health literacy models in detail

Prominent health literacy models that have been proposed include that of Nutbeam (2000); this model conceptualise three types of health literacy as follows:

1. Functional health literacy which is defined as the ability to apply basic literacy and numeracy skills to access and act upon health materials (traditionally aimed at increasing patient knowledge and compliance);
2. Interactive health literacy which refers to the application of more elaborate literacy, cognitive and social skills to confidently engage in everyday health related activities such as interacting with health professionals and implementing self care plans to manage chronic disease;
3. Critical health literacy which considers the role that health literacy plays in the process of community action and social change.

Another model of health literacy has been proposed by Zarcadoolas et al. (2005) to include fundamental literacy, science literacy, civic literacy, and cultural literacy. The model proposed by Zarcadoolas is dynamic but it mainly focuses around the variety of competencies of an individual.

More recently, Squiers et al. (2012) have proposed a framework for assessing health literacy skills. The health literacy skills (HLS) framework proposed by Squiers et al. (2012) focuses mainly on the full pathway from development and moderators of health literacy skills to the eventual health outcomes without explicitly linking them to health promotion models or theories.

A review by Sørensen et al. (2012) documented the existence of twelve health literacy conceptual frameworks including Nutbeam (2000) and Zarcadoolas et al. (2005); and based on their findings, they proposed an integrated model of health literacy that includes and combine the main points of all the other models.

2.5. Measuring health literacy

Measures of functional health literacy are available Davis et al. (1993), Parker et al. (1995) and in use particularly in the United States (US). The Test of Functional Health Literacy in Adults (TOFHLA), Brief Estimate of Health Knowledge and Action – HIV Version (BEKHA-HIV) and Health Activity Literacy Scale (HALS) questionnaires are examples of useful health literacy screening tools for detecting clients or patients with poor health literacy levels that have been used in high income countries such as the US. These functional health literacy tools have been validated and extensively utilized in research especially in the US. Abridged or shortened versions have also been developed as well versions in languages other than English are also available (e.g. Spanish version). Health literacy questionnaires, for example, REALM (Davis et al. 1993) and TOFHLA (Parker et al. 1995) only come close to

assessing some aspects of the domain of functional health literacy which is a subset of the health literacy concept, albeit an important one. The Health Activity Literacy Scale (HALS) (Rudd and Kirsch, 2004) developed in the US is the most recent amongst these listed health literacy questionnaires, and it was developed in an attempt to cover more comprehensively all the health literacy domains. The HALS was to some extent inspired by the general literacy construct and it is suggested to be a better measuring tool than earlier questionnaires, however it is not easily available in the public domain. Another questionnaire, which is work in progress, has been piloted by McCormack et al. (2010) and is based on the health literacy skills framework earlier discussed (see Section 2.4) and it may potentially have useful application in assessing health literacy.

The experience and knowledge base that has accumulated so far within the field of health literacy suggest that it is unlikely that one single tool or questionnaire will be developed that adequately or comprehensively measure all the domains of health literacy. The currently available health literacy tools have limitations because they mostly measure the functional literacy skills of individuals, but they are still useful for providing an estimate of gaps in functional health literacy which may assist in ensuring that health literacy interventions are targeted towards individuals or populations with the most need. It is likely in the long term that a health literacy questionnaire will eventually be developed that assesses all the core health literacy concepts while allowing for adaption for different settings, culture or age groups (Nutbeam, 2009).

Critical health literacy is a challenging and daunting concept to measure because of a variety of reasons that include the lack of a universally accepted and agreed epistemology of the health literacy construct.

Kickbusch (2001) has suggested that key domains of health literacy be identified from an acceptable conceptual health literacy model such as that proposed in the model by Nutbeam, so that suitable indicators or scales of measurements can be developed to be used in broadly describing the critical health literacy sub-domains for the purpose of global or public health research and advocacy.

The critical health literacy approach is particularly important because the majority of populations in low income countries rely predominantly on oral (and not written) traditions of health communication or cultural forms of health communication other than in the English Language, with the implication that the current mainstream discourse on health literacy appears to be excluding them (Estacio, 2013).

2.6. Maternal health literacy

Maternal health literacy is a derivative of health literacy; it also faces similar challenges of being under-researched as evidenced by the paucity of operational definitions of the concept. Maternal health literacy was defined by Renkert and Nutbeam, (2006, p.382) as “the cognitive and social skills which determine the motivation and ability of women to gain access to, understand and use information in ways that promote and maintain their health and that of their children”.

We may transpose (by extension), the domains of health literacy as proposed by Nutbeam (2000) on to maternal health literacy; that is to study functional, interactive and critical maternal health literacy respectively. Maternal health literacy requires further research to clarify the construct as well as understand it.

2.7. Review of health literacy research in West Africa

Very limited work has been done in assessing health literacy rates in Nigeria. The studies related to health and literacy from Nigeria in the literature include (Edet et al. 2010; Manafa

et al. 2007), as well as Kenny (1991) who looked at the relationship between educational attainment (a mediator of functional health literacy) of respondents and its association with diverse health matters (ranging from health of pre-menopausal women and their educational status, literacy and the informed consent process); and any inference to health literacy being an indirect, incidental or secondary finding.

Most of the cited studies that looked at the relationship between educational attainment of respondents and their health, utilised cross sectional study designs (Edet et al. 2010; Manafa et al. 2007) whilst Kenny (1991) used an ecological study design with secondary data analysis. The findings from these mentioned studies indicated that higher levels of educational attainment are associated with better health status amongst respondents. These observed associations were at levels that were statistically significant, however causality could not be inferred because of the ecological and cross sectional study designs that were used.

A study conducted in South West Nigeria among pregnant women attending antenatal care (ANC) in a health facility, (Mojoyinlola, 2011) found a positive association between educational attainment by mothers and skills related to handling a healthy pregnancy as well as ANC attendance. The study by Mojoyinlola (2011) is among the few published research studies conducted on health literacy in Nigeria and a pioneering piece of research for maternal health literacy in Nigeria. However, it was a hospital based study which used a cross sectional study design and mainly focused on the functional health literacy level. In a study from Ghana, Edum-Fotwe (2010) used a cross sectional correlation study design to compare maternal health literacy rates between women living in urban and rural areas of Ghana, from which he surmised that maternal functional health literacy rates are better amongst urban women. His study also found that ANC attendance and delivery in hospitals were associated with higher maternal (functional) health literacy rates. The findings from this study

conducted in Ghana may be explained by the fact that socio-demographic factors such as female educational attainment rates, poverty, income, availability and access to health facilities have an urban – rural differential, with the rural areas relatively having poorer social indices.

2.8. Critical health literacy

Critical health literacy "reflects the cognitive and skills development outcomes which are oriented towards supporting effective social and political action, as well as individual action " (Nutbeam, 2000, p.265). This viewpoint is further supported by the Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development that was released after the 9th Global Conference on Health Promotion at Shanghai which states that "health literacy empowers and drives equity" and further "recognises health literacy as a critical determinant of health" (World Health Organization, 2016, p.2).

Only a few studies in the literature have explored or applied the critical health literacy level proposed by Nutbeam (2000) within his conceptual model in their research. Wang (2000) used a case study design for schistosomiasis control which targeted human behaviours using the full spectrum of the critical health literacy level in China. Levin-zamir and Peterburg (2001) assessed the role of critical health literacy in diabetes self management in Israel and St Leger (2001) in Australia highlighted the role of health promoting schools in developing critical health literacy skills of students to strengthen public health.

Mogford et al. (2010) proposed an alternative health education curriculum to be used in teaching students in the USA; the curriculum teaches critical health literacy as a step towards empowering people to achieve health equity by targeting and taking action on the social determinants of health (SDOH). This study from the USA applied the model of critical health literacy proposed by Nutbeam (2000) in designing their health education curriculum and

identified the four components of the curriculum which will strengthen the students' critical health literacy; that is by promoting the students' knowledge of the SDOH and health as a human right, followed by a set of "activities that help students find their own direction as a social change agent", followed by "teaching specific advocacy tools and strategies" and lastly "the development and implementation of an action intended to increase health equity by addressing the SDOH" (Mogford et al. 2010, p.7). After implementing the curriculum at workshops with students, the authors proposed measuring individuals' change along the following dimensions, "1. knowledge of the SDOH, health inequities and health as a human right; 2. attitudes regarding SDOH, human rights and activism; 3. feelings of empowerment to use new skills to take action on the SDOH (includes measuring new skills acquired) and 4. future intentions to take action on the SDOH" (Mogford et al. 2010, p.12).

2.9. Women's empowerment

Empowerment has been broadly described "as the expansion of freedom of choice and action" (Narayan, 2002, p. 4). However, a definition that includes the elements of process and agency that are unique to the concept of women's empowerment is provided in the definition of empowerment by Kabeer (1999, p.437) as "the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them".

The concept of empowerment is closely intertwined with critical health literacy, however they are two different and distinct concepts because "empowerment motivates (individuals) to engage (with an issue) whilst (health) literacy enables them to make informed and reasoned choices" (Schulz and Nakamoto, 2013, p.4).

2.10. Social capital

Social capital is a widely used term in different disciplinary fields; and this is a reflection of its diverse origins traceable to the 18th and 19th centuries (Claridge, 2004). The earliest use

of the term is attributed by some authors to Hanifan in 1916, but it is the work of more contemporary authors (Bourdieu, 1986; Coleman, 1988; Putnam, 1993 cited in Claridge, 2004, p.7) that has brought the concept to the fore. There are many definitions of social capital and they generally share a common theme which focuses on "social relations that have productive benefits" to individuals, social group or communities (Claridge, 2004, p.8). The dimensions of social capital cited in the literature include; trust, rules and norms governing social action, types of social interaction, network resources and other network characteristics (Claridge, 2004).

Studies have indicated the benefits of social capital for different aspect of living including public health within neighbourhoods (Subramanian et al. 2003), and maternal health knowledge respectively (Ohnishi et al. 2005, p.162). Despite the appeal of the concept, social capital is very complex and difficult to measure in practice (Claridge, 2004). A number of authors assert that social capital can be built over a short time because "any social interaction creates, or at least, changes social capital" (Claridge, 2004, p.16). Evidence from the literature suggests that CBPR and similar participatory approaches can help in building and supporting social relationships and networks that can build social capital in the short term in communities, with attendant positive effects on the health of mothers and newborns in the community (Israel et al. 1998, p.178). A description of social capital states that "it represents the degree of social cohesion which exists in communities. It refers to the processes between people which establish networks, norms and social trust, and facilitate coordination and cooperation for mutual benefit" (Nutbeam, 1998, p.362).

It can also be observed that "social capital is created from the myriad of everyday interactions between people, and is embodied in such structures as civic and religious groups, family membership, informal community networks, and in norms of voluntarism, altruism and trust"(Nutbeam, 1998, p.362), therefore, the stronger these networks and bonds are, the more

likely it is that members of a community will cooperate for mutual benefit. In this way social capital "creates health, and may enhance the benefits of investments for health" (Nutbeam, 1998, p.362).

The World Bank suggests the following key dimensions of social capital and they include "groups and networks; trust and solidarity; collective action and cooperation; social cohesion and inclusion; and information and communication" (Garbarino and Holland, 2009, p.37).

2.11. Critical health literacy, women's empowerment and social capital

The majority of the studies on critical health literacy covered knowledge reappraisal or partly covered appreciation of social determinants of health but all fell short of including the empowerment sub-domain. A number of reasons can be proposed to explain this, and they range from the theoretical to the methodological or practical. Firstly, the theoretical foundations of the health literacy construct itself are still under debate or tensions, and there is no universal consensus about its meanings, boundaries and typologies. Secondly, there are insufficient empirical studies that have been conducted to guide the field and build upon for further research. Finally, supporting the intended empowerment process that is implicit within the critical health literacy level requires committed and sustained efforts, takes longer to achieve, may challenge local political structures and is more difficult to research and study.

Several studies indicate that participatory research methods are potentially valuable for promoting both the processes of participation and empowerment in development work. Participatory (traditional) art forms that are locally acceptable can be used to facilitate the conscientization and empowerment processes among the members of the women's groups so as to promote their critical maternal health literacy. Conscientization is described as the "process of developing a critical awareness of one's social reality through reflection and action; and action is fundamental because it is the process of changing the reality (of mothers

and newborns) in the communities within which these women live" (Freire Institute, 2018, para.4). Paulo Freire said that "we all acquire social myths which have a dominant tendency, and so learning is a critical process which depends upon uncovering real problems and actual needs" (Freire Institute, 2018, para.4). An added advantage of the participatory research methods is that they help in enhancing social capital which in turn promotes community cohesion and resilience.

Health literacy and social capital are closely linked concepts, and the former has been described in a study as an important component of social capital (Kwan et al. 2006). Another author "links health literacy in the community to the concept of social capital, arguing that health literate people live longer and have stronger incentives to invest in developing their own and their children's knowledge and skills" (Ratzan, 2001, cited in Sørensen et al. 2012, p.8).

2.12. Health literacy, empowerment, participation, and participatory research approaches

The word participation is an appealing concept widely used to represent a variety of meanings in different disciplinary fields. Participation actually represents a continuum in practice; ranging from low to high levels of participation. Participation as a concept mainly arose from the field of political science and development studies particularly as applied to LMICs (Buchy and Ross, 2000; Lane, 1995 cited in Claridge, 2004, p. 17). Other authors suggested that the roots of community participation are influenced by "western ideology, the influence of community development and the contribution of social work and community radicalism" (Midgley et al. 1986 cited in Claridge, 2004, p. 17).

Another important factor for encouraging participation is to recognise "the uniqueness of an individual as an entity who is capable of making unique contributions to decision-making"

(Mompoti and Prinsen, 2010, p.626). There are several definitions of participation, each reflecting different ideological or philosophical positions, but a common thread that runs through all the definitions is "the role of community in decision-making" and hence is often interchangeably used with 'community participation' in the literature (Claridge, 2004, p.19).

Participation can range from nominal membership to a dynamic interactive process in which all stakeholders, even the most disadvantaged, have a voice and influence in decision-making (Agarwal, 2001). In the Ottawa Charter on Health Promotion, participation is acknowledged to be central to sustaining health promotion action, whilst health literacy fosters participation because "access to education and information is essential to achieving effective participation as well as empowerment of people and communities" (Nutbeam, 1998, p.351).

Participation and empowerment are closely linked but distinct concepts that influence each other. In other words, "participation and empowerment are inseparably linked, they are different but they depend on each other to give meaning and purpose" (Claridge, 2004, p. 21). Participation implies action, or being part of an action such as a decision-making process while empowerment signifies gaining control, including having the entitlement or ability to participate and influence decisions (Lyons et al. 2001).

Participation research or development work can be used as a 'means' (supportive process) or as an 'end' (intended outcome). For example, participation maybe used as a project efficiency enhancement tool for achieving better project outcomes in one instance (Clever, 1999) or deliberately to promote empowerment and equity among participants in a project (Clever, 1999; Claridge, 2004). I deliberately used participation in my research project both as a 'means' for promoting research project efficiency as well as an 'end' for achieving empowerment amongst the women's groups members.

The degrees of community participation in research may take any of the following forms "community controlled and managed that is no professional researchers involved, followed by community controlled with professional researchers managed by and working for the community, followed by co-production that is equal partnership between professional researchers and community members and finally followed by controlled by professional researchers but with greater or lesser degrees of community partnership" (Banks et al. 2013, p.265).

Ensuring that participation takes place in research decision making, planning and design (practice) is difficult and faces some obstacles which include structural (emanating from the political environment), administrative (usually bureaucratic) and social (arising from cultural dependence on experts/leaders for decisions, lack of experience or formal training in research or inadequate time) (Oakley, 1991, cited in Gregory, 2000, p.184).

2.13. Participatory research approaches

The terms "participatory research" and "participatory action research" (PAR) are often used interchangeably. PAR works towards achieving a "political or radical" agenda by some, for example Gibbon (2002); and participatory research can be a "means to an end or an end itself" (Gibbon, 2002, p.553).

Participatory research is a family of approaches (rather than one distinct approach) that share a similar philosophy. Its philosophy is founded on critical theory as proposed by Habermas (1975), Bohman (2011), liberation theory (Freire 1972), as well as feminist theory. Critical reflection is important for the conscientization process to take place (Freire, 1972), and conscientization facilitates collective action by community members; which will then spur the attainment of critical maternal health literacy. Ultimately, through these shared feelings,

thoughts and behaviours, actions the community becomes aware of the possibilities for positive change (that is change for better maternal health status in their community).

It is important to acknowledge the challenges involved in using participatory research methods and they include skills of the facilitators and co-positionality between the participants and researcher. Other challenges related to using participatory research methods include, the duration it takes to set up the participatory process, personal safety of the participants when participation threaten local power structures/balance, as well as exacerbation of local conflicts of interests.

Part of the strength of PAR is that it may incorporate a formative or needs assessment component that takes place in collaboration with community members in the process of conducting research (Ahari et al. 2012; Walley and Wright, 1998). The concept of empowerment is very important in the process that enables the goals of PAR to be achieved by promoting experiential learning by groups or communities, reflection within communities, involvement of groups or communities in the research process, bringing about social change as well as community ownership and sustainability of the products of the research.

PAR uses a range of validated methods such as quantitative, qualitative and arts based methods to achieve its objectives (Brydon-Miller, 2004), while promoting the participation of groups or communities in the research process. A very central requirement towards achieving participation is the skill and personality of the facilitator(s) as well as capacity building via in depth group learning using an organizational development process (Gibbon, 2002).

PAR is based on “spiral” process of action followed by critical reflection, and the products of the critical reflection, now feed back into the process so as further refine it. So it is an iterative process which continuously assists in refining all the stages of the cycle and this

process continues until the desired objectives of action research are achieved in terms of social change and action (Baum et al. 2006).

2.14. Selected participatory research approaches - community based participatory research, participatory visual methods and participatory women's groups approach

I currently work in a tertiary level academic institution (Bayero University) which is located in Kano, Northern Nigeria; and it is surrounded by poor and deprived communities with high levels of maternal and neonatal mortality rates as discussed further in Chapter 4 (See section 4.3). These factors influenced my selection of community based participatory research (CBPR) as the appropriate participatory research approach to use in addressing the maternal and neonatal health problems in Kano in a sustainable, effective, empowering and responsible manner.

CBPR is mainly used to describe participatory research conducted within specified community settings, for mostly health related problems and usually in collaboration between communities and academia. CBPR has been defined as "a collaborative research approach that is designed to ensure and establish structures for participation by communities affected by the issue being studied, representatives of organizations, and researchers in all aspects of the research process to improve health and well-being through taking action, including social change " (Viswanathan et al. 2004, p.3).

The principles of CBPR are similar to that of PAR because it also based on collaboration between the researcher and the community members, it is participatory in nature, it empowers the community members in the community where the research is being conducted and it ultimately wants to bring about a change in the targeted health or health related problem (Sheikhhattari and Kamangar, 2010). The main difference between PAR and CBPR is the institutional structure called a community advisory board (CAB) or similar structure that

manages the collaborative arrangement between community members and the academic institution in the CBPR process. The CAB as well as the research relationship/arrangement between academia and community members represent unique features of CBPR that differentiates it from other participatory research approaches.

The other key principles of CBPR include; recognition of the community as a unit of identity, views the community as having assets (resources) or strengths that can be leveraged, facilitation of collaboration at all phases of the research process, integrates knowledge and action for mutual benefit of the partnership, supports co-learning and empowering processes that help address social inequalities, utilises a cyclical and iterative process, addresses issues in a culturally sensitive and context specific manner, and shares findings and knowledge among all partners (Israel et al. 1998, p.178 - 180).

The ethics of CBPR (just like that of conventional research) are also concerned with the ethical principles of respect for autonomy, justice, beneficence and non maleficence; but they are additionally concerned with the ethics of community participation, roles, risks, ownership of knowledge/findings and how these are disseminated. Other ethical issues in CBPR identified in the literature can be thematically grouped into "partnership, collaboration and power", "blurring the boundaries between researcher and researched, academic and activist", "community rights, conflict and democratic representation", "ownership and dissemination of data, findings and publications", "anonymity, privacy and confidentiality" and "institutional ethical review processes" (Banks et al. 2013, p.267-268).

The other general ethical principles underpinning CBPR that have been proposed include; "mutual respect, equality and inclusion, democratic participation, active learning, making a difference, collective action and personal integrity" (Centre for Social Justice and Community Action and National Coordinating Centre for Public Engagement, 2012, p.8).

The adherence to CBPR best practices, ethics and principles are regarded as very important for increasing the scientific rigour of CBPR in terms of confirmability, dependability, credibility and transferability (Loewenson et al. 2014; Kraemer Diaz et al. 2013); including standards to be adhered to when preparing manuscripts or grant applications for studies using CBPR (Loewenson et al. 2014; Gibbon, 2002). It is also important to note that CBPR just like other forms of participatory research also faces other unique challenges encountered when using participatory research approaches.

Participatory visual methods (PVM) are part of the family of participatory research approaches that have been found useful for engaging and working with individuals that are socially marginalised, vulnerable or are unable to read or write. They include "different creative forms of communication and expression, such as drama, photography, film, drawing, design, creative writing and music" (SDC and IDS, 2013, para. 3). The use of visual medium to aid participation can bridge the gap in the participation research capacities and understanding between the researcher and the co-researcher (WHO and PAHO, 2017) and co-researchers may not necessarily be experts in a particular visual method but they should be supported and trained on how to use them (Richards, 2011). PVM was used during auto-diagnosis sessions with women's groups to elicit their perceived maternal health needs and priorities.

The participatory women's group approach for improving maternal and neonatal health was pioneered by the WARMI project that worked in Bolivia and some South American countries in the 1970s. The findings from the WARMI project and other studies in Asia indicated that women's groups activities helped in reducing newborn deaths (Howard-Grabman, 1993) as well as maternal deaths (Prost et al. 2013). A more detailed description and review of participatory women's groups is provided in chapter three.

2.15. Health psychology

The field of health psychology explores a number of concepts (such as empowerment, social capital and social action) that are related to the concept of critical health literacy that can help our understanding of how, for example, participation can improve maternal health literacy.

There has been a development of four proposed fields of health psychology which cover different aspects or domains of health literacy (Estacio and Comings, 2013): clinical health psychology, public health psychology, community health psychology and critical health psychology. Community health psychology attempts to understand how community based factors affect the ability of people living in that community to appraise and use health related information to achieve better health outcomes for their communities. The field of community health psychology at its interface with critical health literacy as stated within the framework proposed by Estacio and Comings (2013) appears useful for understanding how critical health literacy may affect empowerment and social capital. Community health psychology is relevant to understanding how community and cultural changes may occur in the medium or intermediate term within the study settings as well as how social and political changes take place in the long term, with participation as a theme that runs throughout.

Community health psychology is based on community research and social action; part of the role of community psychology is working on health promotion and illness prevention among healthy people as members of communities and groups (Hepworth, 2006, p.340). Another focus of community health psychology is its concern with the theory and methods of working with communities to combat disease and promote health (Campbell and Murray, 2005). It is concerned with the wellbeing of communities or groups rather than individuals - hence its preference for the term wellness rather than illness to describe the concept of health. Its emphasis is on a preventive rather than curative approach and community health psychology is explicitly frank about its value based approach of empowering communities towards

achieving desired health goals. It does not use traditional psychological approaches that are mostly focused on the individual but rather looks at the whole community. It also recognises how art (including creative or performing arts), in the broadest sense or meaning is a useful empowering approach for engaging and mobilising communities to reflect and act on social issues that need to change, and to reflect on and critically manage these social change processes so as to achieve desired health goals and objectives (such as improved maternal health literacy).

2.16. Participatory monitoring and evaluation – the most significant change (MSC) method

The most significant change (MSC) method is a participatory monitoring and evaluation approach that does not involve the use of indicators; it is a validated method used in evaluating any changes that occur during participatory development projects (Sango and Dube, 2014). MSC "is participatory because many project stakeholders are involved both in deciding the sorts of change to be recorded and in analysing the data. It is a form of monitoring because it occurs throughout the programme cycle and provides information to help people manage it. MSC contributes to evaluation because it provides data on (qualitative) impact and outcomes which can be used to help assess the performance of the programme as a whole" (Overseas Development Institute, 2009, para.1).

The MSC approach evaluates actual events/experiences of those affected by the project and makes sense out of it so as to improve the programme or project (Sango and Dube, 2014).

2.17. The project management cycle during the fieldwork stage - (inception/design, implementation and evaluation phases)

I used a project framework to carry out the action research using a mix of participatory methods and this section will provide a brief overview of the features and stages of a project.

The characteristic features of projects that have been generally described in the literature include having a specified and limited budget, date of completion, performance goals, and a series of complex or inter-related activities (Pinto and Prescott, 1988, p.6). A project life cycle have also been proposed in the literature to have the following sequence, conceptualization, planning, execution and termination (Pinto and Prescott, 1988, p.8) and the life cycle of most conventional projects typically follows this temporal and logical sequence.

The fieldwork of my thesis consisted of inception/design, implementation and evaluation phases respectively, however there were important differences between the fieldwork I conducted and those conducted during non participatory research. That is because I used a variety of participatory research approaches in my thesis including CBPR. This meant that I did not pre-determine what maternal problems to address or interventions to implement because I had no prior knowledge of what the community members would identify as their felt maternal health problems, priorities or preferred intervention activities. In practical terms, this meant that the activities that took place during the different phases of the field work were informed by the perceived needs and aspirations of community members which were adopted after several sessions of discussing and reflecting with them.

2.18. Project design during the inception phase

The following discussions are related to components/processes of a research project; I discuss these here to introduce the project framework that was used to implement and evaluate the project undertaken and reported in this thesis.

The main activities that should be conducted during project planning and initiation are; refining the research aim, further reviewing the literature including the methodology, data collection and analysis methods to be used as well as ethical considerations and logistics planning. There should also be identification of the proposed intervention, its causal

assumptions and the underlying project logic model clearly at this stage (Moore et al. 2010). The logic model of a project is a representative drawing of the complex intervention which describes how inputs are applied to ensure implementation, how the components are implemented, anticipated mechanisms of action and the planned outcomes (Moore et al. 2010).

2.19. Project implementation phase

The implementation phase describes the period or phase of a project when project activities designed to produce an effect(s) are carried out so as to achieve the project objectives. It is important to note that implementation activities should be conducted with evaluation in mind; and for the purposes of evaluation such project can be "conceived as a combination of fidelity, dose and reach" of the proposed intervention (Moore et al. 2010, p.36). Interventions can be described as "sets of activities delivered to individual participants" or communities or organizations (Moore et al. 2010, p.32), while implementation is defined as "the process through which interventions are delivered, and what is delivered in practice" (Moore et al. 2010, p.36).

The key dimensions of implementation include; the implementation process which consists of "the structures, resources and mechanisms" through which delivery is achieved, while fidelity is the consistency of what is implemented with the planned intervention. On the other hand, adaptations "are alterations made to an intervention in order to achieve better contextual fit while dose is how much of the intervention is delivered and reach is the extent to which a target audience comes into contact with the intervention" (Moore et al. 2010, p.46).

2.20. Contextual factors during implementation

Context is considered primarily in terms of pre-existing conditions that may facilitate or impede implementation fidelity (Linnan and Steckler, 2002). Context is also described as the

"factors external to the intervention which may influence its implementation, or its mechanisms of impact act as intended". The study of context may include contextual moderators "which shape, and may be shaped by, implementation, intervention mechanisms, and outcomes" (Moore et al. 2010, p.8).

Another author (Weiss, 1997), advocate looking beyond understanding of the preceding factors and view contextual factors as moderating outcomes; meaning the same intervention may produce different outcomes in different contexts and "participants are seen as agents, whose pre-existing circumstances, attitudes and beliefs will shape how they interact with the intervention" (Moore et al. 2010, p.48)

2.21. Project implementation challenges

There are factors which influence the implementation of any project and they include the research project participants' personal characteristics, social circumstances, and the match between participant needs and programme goals. The project staff also affect project implementation in terms of how they translate the project design into action, how the background of project staff contribute to the quality of interactions with participants, as well as the ability of project staff to carry out the activities of the project and the project management inputs into the professional development and recognition of project staff (Duke et al. 2015).

Another significant factor that affects project implementation is the organisational climate. The organisational climate encompasses the quality of the work environment for project personnel and the relations between the broader project and its sponsoring organisation. The last factor that can influence the implementation of a project includes the community characteristics, community resources, and programme involvement which are relevant for the successful implementation of the conceptual design of the project (Duke et al. 2015).

2.22. Project evaluation phase

The terms evaluation, programme evaluation or evaluation research are used interchangeably and spans several fields (Rossi et al. 1979). Evaluation as a field has historical roots stretching to the 17th century but it mainly came into force as a scientific discipline in the 20th century (Rossi et al. 1979). The evaluation of health and other social programmes that are planned or intended to improve the health of populations is a very important activity which amongst others, guides the selection of effective programmes by policy makers.

Programme evaluation has been described as "a trans-discipline that is characterized as a discipline that supplies "essential tools for other disciplines, while retaining an autonomous structure and research effort of (its) own" (Scriven, 2003 cited in Mertens, 2015, p.75). Evaluation is also described by some authors as primarily social research which borrow methods from scientific research so as to inform decision making (Cronbach, 1980 cited in Rossi et al. 1979, p. 65-66) while some authors assert that evaluation should be a good fit between social and scientific research (Campbell, 1969, cited in Rossi et al. 1979, p.409).

The different definitions of evaluation underscore the fact that there is no single unifying theory of programme evaluation, and evaluation is still an evolving field (Moore et al. 2010).

2.23. Research paradigms and choice of evaluation methodologies

Some authors have identified four branches of methods in the field of evaluation (Alkin and Christie, 2004; Mertens and Wilson, 2012). The broadly identified and mapped branches in the field of evaluation are: Methods, Use, Values and Social Justice. It is important to note that all the branches are linked to each other akin to a three-dimensional figure, however the Values and Social Justice branches are much more closely linked or aligned with one another.

The four research paradigms that broadly influence the choice of evaluation methodologies are postpositivist, constructivist, transformative and pragmatic paradigms (Mertens and

Wilson, 2012). These paradigms can be mapped unto the branches in the field of evaluation as shown in the table below

Table 2.1: Evaluation Paradigms Proposed by Mertens and Wilson (2012)

SN	Paradigm	Branch	Description
1	Post-positivist	Methods	Focuses primarily on quantitative designs and data
2	Pragmatic	Use	Focuses primarily on data that are found to be useful by stakeholders; advocates for the use of mixed methods
3	Constructivist	Values	Focuses primarily on identifying multiple values and perspectives through qualitative methods
4	Transformative	Social Justice	Focuses primarily on viewpoints of marginalized groups and interrogating systemic power structure through mixed methods to further social justice and human rights

The transformative paradigm is the explicitly adopted research paradigm that I used in informing my research and is the basis for all the participatory approaches (such as community-based participatory research, auto-diagnosis sessions, participatory women's group and Most Significant Change) used in my thesis. Another evaluation paradigm of

naturalistic evaluation was coined by (Guba, 1978 cited in Dehar et al. 1993, p.207) and it proposed a grounded approach to evaluation. This grounded approach is in direct contrast to the prevailing paradigm of a priori formulation of evaluation parameters. Naturalistic evaluation also makes extensive use of qualitative research methods in contrast to quantitative experimental methods predominantly used in the 'conventional or traditional' forms of evaluation.

There are adapted (evaluation) methods that have evolved from dissatisfaction with donor driven approaches to evaluation particularly in LMICs. These adapted methodologies are generally based on the transformative research paradigm and were mostly developed through working with local practitioners to be responsive/adaptive to different socio-cultural, political, economic, and ecological settings of the respective LMICs. Proponents of adapted evaluation methodologies posit that methodology is "context-sensitive not context-neutral" (Carden and Alkin, 2012, p.108). Examples of adapted evaluation methodologies include Outcome Mapping, Realist Evaluation, Developmental Evaluation as well as the Most Significant Change (MSC) approach. The MSC approach falls under the Use branch of evaluation (Carden and Alkin, 2012).

2.24. Evaluation approaches

There are two broad traditional approaches to evaluation, which are summative evaluation and formative evaluation. This distinction between formative and summative evaluation was made in the 1960s by (Scriven, 1967 cited in Dehar et al. 1993, p.212). However, formative evaluation has been defined as "an ongoing process that is integrated into the development and implementation of a research project. It provides assessment information within a feedback loop. This assessment identifies the strengths and weaknesses of the project as it progresses. Data "obtained from evaluations may be used to modify and redevelop the

measurement instruments, the research design and the intervention programme during the course of implementing a project" (Evans et al. 1989, p.230).

The importance of conducting formative research early on in the life of a programme has been argued by (Hornik, 1980, cited in Dehar et al. 1993, p.212) who pointed out "that by the time a programme has reached the relatively smooth operational stage where outcome evaluation can be conducted, substantial financial and political commitments have been made that are essentially irreversible".

An important aspect in formative evaluation is that the evaluator must be involved in the questions and decisions regarding the project throughout the design, development and implementation stages of the programme. Activities that may be required during formative evaluation include developing and refining the programme (logic) model, objectives, and strategies, reviewing the research literature, conducting needs assessment surveys and other exploratory research, pretesting programme materials, piloting of interventions, obtaining feedback from programme participants, assessing initial program effects, and development of programme evaluation systems (Dehar et al. 1993).

Other evaluation approaches include process evaluation; process evaluation "fosters an understanding of programme implementation, the causal events leading to change, and the specific programme components that most influence outcomes" (Altman, 1986, p.485). While another author (Patton, 1979 cited in Dehar et al. 1993, p.208) describes process evaluation as focusing on the internal dynamics and actual operations of a programme in order to understand its strengths and weaknesses, and changes that occur in it over time, and he emphasized the use of qualitative research methods in process evaluation.

Data from process evaluation can be used for formative purposes which involves "using process evaluation data to fine tune the programme" (Saunders and Evans, 2005, p.136).

Process evaluation planning is best undertaken as an iterative rather than linear process (Saunders and Evans, 2005), which implies constant modifications of the plan in view of changing circumstances.

2.25. Domains of evaluation

Evaluation generally assesses the following domains: the need for the programme; the programme's design; its implementation and service delivery; its impact, or outcomes; and its efficiency (Rossi et al. 1979).

2.26. Evaluation research designs and data collection methods

The evaluation questions, objectives and feasibility considerations generally determine the choice of research design and data collection methods while considerations of both the context and the content of the evaluation question should guide the choice of the data collection method.

The conventional evaluation (research) designs are the experimental, quasi-experimental and traditional/observational designs while the data collection methods also fall into several broad categories. Common examples of data collection methods used in evaluation include surveys, personal interviews, telephone interviews, and questionnaires to be completed by respondents, group discussions/focus group discussions, observations/participant observations and document review (Linnan and Steckler, 2002).

2.27. Complex interventions

The intended intervention package is a complex intervention and this section therefore reviews the features of complex interventions that are relevant to the design and delivery of this project. A complex intervention has been described as an intervention comprising of two or more components which are designed or implemented so that they interact to produce an intended change. The complexity implied in the term 'complex intervention' is also related to

implementation of the intervention, and how it interacts with the context (Moore et al. 2010). Thus inherently, all complex intervention presupposes at least two or more causal assumptions or underlying theories or explanations. On the other hand, a “public health intervention” is any intervention focused on primary or secondary prevention of disease and/or positive health promotion (Moore et al. 2010). In practice, aspects of many public health interventions are related to context, involve multiple complex causal mechanisms and therefore also meet the definition of a complex intervention.

Other dimensions of complexity as identified by the MRC framework (Craig et al. 2013; Moore et al. 2010), include the variety of and specific skill sets required for the behaviours related to the complex intervention; the quantity or variety of organisational levels targeted by the complex intervention; the quantity and types of outcomes.

Ultimately, "complex interventions are intended to change the dynamics of social systems by influencing the behaviours of actors in the social systems" (Hawe et al. 2009 cited in Moore et al. 2010, p 44). The outcomes of complex interventions sometimes occur iteratively in an additive or diminishing fashion over time and maybe affected by feedback loops (Moore et al. 2010). This is likely to be directly relevant to programmes that aim to change attitudes or behaviour that are largely socially determined (including those around maternal and infant health practices), where changes in the attitudes or behaviour of some individuals or groups may have a positive or negative feedback on social norms and the future behaviour of others.

2.28. Therapeutic landscape and maternal health in Northern Nigeria

Therapeutic landscape can be described as “the field of available forms of health provision as experienced, understood and constructed through practice by the populations that live with them” (Bloom et al. 2008, p.2158) and he proposed that the concept may be useful for describing the maternal health seeking practices as well as their underlying economic and

socio-cultural determinants. It is important to note here that during the subsequent discussion about landscapes, that places and health are socially constructed and are not “fixed realities” (Smyth, 2005; MacKian, 2008, p.108).

In the article by Bloom et al. (2008), the findings indicate that there are more actors in the therapeutic landscape of Guinea than the erstwhile concept of just two categories of healthcare providers (modern and traditional health care providers). The contemporary categories are more varied than the previously proposed categories of traditional versus biomedical (which can be government and private sector dominated health care providers). The findings related to the therapeutic landscape of Guinea may be applicable to the Nigerian context too because the two countries share similar socio-cultural, economic and environmental features.

2.29. Indigenous knowledge related to maternal health in Northern Nigeria

Indigenous knowledge has been defined as the "common sense knowledge and ideas of local peoples about the everyday realities of living" Dei (1993 as cited in Agrawal, 1995, p.418). Indigenous knowledge contrasts with the international knowledge system generated by universities, research institutions and private firms and it is the basis for local level decision making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities. Such knowledge is passed down from generation to generation, in many societies by word of mouth or through observations. Indigenous knowledge "has value not only for the culture in which it evolves, but also for scientists and planners striving to improve conditions in rural localities" Warren et al. (1991 as cited in Agrawal, 1995, p.416).

Nigeria is a multi-ethnic country with a long and strong history of traditional beliefs and varying forms of indigenous knowledge related to maternal health. Traditional (native)

medicine practitioners have had and continue to have a very big role in influencing indigenous knowledge related to health in Nigeria and there are several variants of such practitioners depending on the ethnic or tribal group being studied.

The indigenous knowledge related to maternal health that was in existence in Nigeria during the pre-Islamic era was largely influenced by animist or idol worshipping beliefs and practices, however the advent of Islam (between the 14th and 17th century) in the region greatly influenced and imbued Islamic concepts of health and illness in the local communities albeit with lingering influence of animist practices (Mohammed, 2011).

There are several types of traditional health practitioners in the predominant Hausa communities where this research project was conducted in Kano, Northern Nigeria. They include “mallams” (these are local male Islamic teachers that wholly or partly use recitation of prayers, potions, amulets purportedly derived from animist and/or Islamic traditions), “bokas” (these are mainly male traditional animists who use herbs, inanimate objects, animals or animal parts, invocation of spirits or jinn for the treatment of physical or mental ailments), “yan bori” (these are a subset of male and female traditional animists who belong to the 'yan bori' cult and claiming possession by spirits/jinns through which they provide treatment for a variety of ailments), “mayu” (these are local witches/wizards who are believed to have the ability to “steal” souls, and can cause and cure some illnesses), “unguwar zoma” (these are wholly female traditional birth attendants who are the main traditional custodian of ailments that occur during the pregnancy, delivery, postpartum and neonatal periods), “wanzamai” (these are male traditional barbers who give out local remedies and also perform a number of traditional surgical procedures such as blood cupping, removal of the uvula, cutting of the umbilical, female circumcision, local surgical extension of the vaginal orifice in cases of obstructed labour and skin incisions for the treatment of some ailments), “masu gyaran k’ashi” (these are male traditional bone setters who are involved in treating or setting bone

fractures) (Hall, 1988). These traditional medicine practitioners mostly base their treatments on spiritual or local traditional medicines that are generally based on indigenous knowledge with no scientific basis. However, traditional remedies are more culturally acceptable and utilised than modern medicines or treatments by the majority of rural communities as the first line of treatment for most ailments including maternal and neonatal health conditions.

2.30. Connecting the concepts: critical health literacy, maternal health literacy, participatory research approaches, community health psychology, therapeutic landscapes and indigenous knowledge related to maternal health in Northern Nigeria

I preferentially selected participatory research methods to conduct my research thesis on promoting maternal health literacy so as to improve maternal health because they acknowledge the validity of “local knowledge” or experiences and are empowering whilst promoting ownership, sustainability as well as a bottom-up approach (Jewkes and Cornwall, 1995). In addition, participatory and qualitative research methods are better suited for investigating concepts like critical health literacy, social capital, empowerment as well as the health of mothers and newborns because such complex social phenomena or factors are more amenable to be 'described' rather than being 'counted'. Another strength of participatory research approaches is that they sets out to emancipate and involve community members to be co-researchers or co-subjects a priori.

I also prepared myself to face the challenges of using participatory research methods such as the negative perception of their “scientific rigour” in some quarters (Buchanan et al. 2007), being more difficult and time consuming, lack of interest from some communities, difficulty in accessing funding and fitting the research within the PhD timelines because of the complex nature of carrying out participatory research in real life settings (Jewkes and Cornwall, 1995). However, the part-time nature of my PhD gave me the time and opportunity to use

participatory research methods which would not have been possible during a conventional full-time PhD.

Additional concepts under the project inception/design, implementation and evaluation phases as well as complex intervention were also reviewed so as to provide clarity and background before subsequent usage within the research.

2.31. Summary

In this literature review chapter, I reviewed concepts such as health literacy, critical health literacy and maternal health literacy together with concepts in community health psychology, therapeutic landscapes and indigenous knowledge related to maternal health as well as participatory research approaches with a view of using the knowledge base in these different (but related) fields to co-design, co-implement and evaluate interventions that may promote maternal health literacy and improve maternal health in Northern Nigeria.

I adopted and was influenced by the critical health literacy level proposed by Nutbeam, in developing and carrying out my research thesis because this level aims at the attainment of social change and empowerment. All knowledge-based attempts at improving female empowerment is particularly important in Northern Nigeria because of longstanding and deep rooted socio-cultural and economic systems that subvert the status of women making them powerless, voiceless and vulnerable to ill health.

The next chapter details the scope of previous research on women's groups as this also informed my study. It presents a scoping review of research conducted in LMICs using the participatory women's group approach which complements the review of concepts in this chapter by illustrating their relevance in this context.

Chapter Three: Scoping Review of Research Evidence Relating to the Participatory Women's Groups Approach

3.1. Preamble

This chapter presents the scoping review of a major participatory research approach that was used and evaluated in this thesis; that is the participatory women's groups approach. The participatory women's group approach is an emerging approach that has been successfully used in some LMICs to promote community participation in maternal and child health particularly amongst women living in poor or marginalised areas.

This scoping review reviewed how much research has been generated in the application of the participatory women's groups approach in the field of (particularly maternal and neonatal) health, in what countries, in what settings, in what populations and with what interventions; (using) either quantitative or qualitative study designs; as well as the breadth of the various mechanisms involved in the application of this approach. This review also described the scope of researches conducted using participatory women's groups; the research gaps and policy recommendations highlighted in such researches; as well as the various underlying assumptions, and potential mechanisms mentioned in studies that assessed the effect of participatory women's groups on the health of mothers and newborns.

3.2. Methods

This scoping review was undertaken to summarise and synthesise the scope of previous researches so as to inform further development of the participatory women's groups for reducing maternal and newborn deaths particularly in LMICs. This scoping review collected relevant literature and subsequently synthesised the collected data/evidence from the thirty three studies included in the review (Arksey and O'Malley, 2005).

3.2.1. Inclusion criteria

The studies included for the scoping review were primary research studies, systematic reviews, meta-analyses, guidelines, technical reports, scoping reviews; the studies could be quantitative or qualitative studies, whether peer or non peer reviewed; including grey literature; no specific exclusions were made based on the type of research or publication. The inclusion criteria was made broad in keeping with the spirit/intent of scoping reviews Arksey and O'Malley (2005) and because of the emerging (new) nature of the participatory women's group approach; so as to ensure as much as possible that all types of research evidence were included.

Language restrictions were imposed on papers published in any language other than English because I did not have resources to translate studies conducted in any language other than English. However all studies written or translated into English were included. In addition, studies written before 1986 (that is preceding the Ottawa Charter on Health Promotion) were excluded because this period coincide with when the concept of health promotion and subsequently health literacy came into wider general usage. The list of articles included in the review are provided in Appendix II.

3.2.2. Searching

The search terms used during the review include "women's group" or "mother's group" and "maternal health" or "mother's health" or "women's health" and "newborn health" or "neonatal health"; and the list of other search terms used for the review are provided in Appendix II. These search terms were used to conduct a primary search in two databases namely Medline via Ovid and CINAHL (Cumulative Index to Nursing and Allied Health Literature) between the period (30/03/17 - 06/05/17). For my primary search, I selected Medline via Ovid because it has the capacity to search different databases in different disciplines whilst CINAHL indexes records for nursing and allied health professions; these

are factors that will increase the chances of detecting existing studies which used the participatory women's group approach. This initial search was further followed up with an analysis of the (key) words contained in the title and abstract of retrieved papers, as well as the index terms used to describe the articles. The second search was subsequently conducted using all identified search terms across Google Scholar and Europe PubMed Central between the period of (10/05/17 - 12/06/17). Ultimately, the overall search period for this scoping review covered from between (30/03/17 -12/06/17).

I selected Europe PMC and Google Scholar for my secondary search because both were free to access online, both were good sources of full text versions of included studies (especially those that were open access) which I could download. In addition, Google Scholar had the potential to provide grey literature regarding the participatory women's group approach. The third step of the search strategy involved searching the reference list of all identified articles for additional studies that used the participatory women's group approach. Thereafter, all the records obtained (after removal of duplications) following the search were further screened (based on the objectives of the scoping review) after reading their respective abstracts.

The final step involved obtaining the full text versions of all included studies (from the University of Sheffield Library and other internet sources) and a charting table was used to carry out data extraction (see sample charting table in Appendix II) from all the included studies. I did not conduct any citation searches in Google Scholar due to time constraints and because I anticipated being able to adequately scope the literature due to the narrowness of the field and relative paucity of articles on the participatory women's group approach.

3.2.3. Extraction

I designed the charting tables which I used to extract information iteratively from the list of the collated full text versions of the included studies (n=33). The extracted information from the included studies were then grouped into three broad categories

- a) General characteristics of included articles
- b) Methodological characteristics of included articles
- c) Assumptions, recommendations and implementation research gaps

3.2.4. Synthesis

The predominant study design used in the primary quantitative studies that implemented the participatory women's groups approach was the cluster randomised controlled trial study design (eight studies), followed by controlled (before and after) study design (three studies) and the longitudinal prospective study design (one study). The outcomes assessed by these studies are as follows; reduction in neonatal/perinatal mortality rate (seven studies), reduction in maternal mortality rate (two studies), no effect on neonatal/perinatal mortality rate (one study), and no effect on maternal mortality rate (one study).

On the other hand, the secondary studies utilised variety of designs since they were attempting to answer different research questions, however most were secondary analyses of data from the cluster randomised controlled trials, process evaluation or formative research of the cluster randomised controlled trials as well as descriptions of the implementation activities for the community mobilization processes using qualitative research or mixed methods. There were two systematic reviews on the participatory women's group approach that were conducted by Prost et al. (2013) and Houweling et al. (2016) respectively, but there was no reported scoping review on participatory women's groups. In addition, there were no primary or secondary studies that were found during the review which assessed maternal

health literacy or used any related participatory action research or community based participatory research (PAR/CBPR) research designs.

Seven studies used qualitative research methods to assess some aspects of the trials that used participatory women's groups intervention. The range of qualitative methods used include participant observation and analysis of reports as reported by Morrison et al. (2005), focus group discussions (FGDs) by Borghi et al. (2007), semi-structured interviews, group interviews, focus group discussions, unstructured observation of groups and photo-elicitation methods by Morrison et al. (2010), review of intervention documents, qualitative structured discussions with group members and non-group members, meeting observations, as well as descriptive statistical analysis of data on meeting attendance, activities, and characteristics of group attendees by Rath et al. (2010), FGDs and interviews by Rosato et al. (2006), and description of project documents by (Rosato et al. 2010).

3.3. Findings

3.3.1 Outline of number and type of studies included in the scoping review

There were a total of thirty three studies included in this scoping review following the search of the literature. All the full text versions of the studies were obtained and information extracted using the designed charting table. The table 3.1 below provides a summary of some selected characteristics of the included studies. However, further details including search terms, PRISMA diagram, detailed list of included studies and snapshot of data extraction table can be found in Appendix II

Table 3.1: Selected characteristics and type of studies included in the scoping review

(Overall number of included studies, n=33)

SN	Characteristic of included study	Sub-category	Freq	%
1	Publication year of included studies	≤ 2004	1	3.0
		2005 - 2010	7	21.2
		>2011	25	75.8
2	Countries where included studies/review articles were conducted	Nepal	8	24.2
		India	8	24.2
		Bangladesh	8	24.2
		Malawi	7	21.2
		UK (2 review papers on participatory women's groups)	2	6.1
3	Primary research area(s) addressed by the included studies	Neonatal / perinatal health	13	39.4

SN	Characteristic of included study	Sub-category	Freq	%
		Maternal health	5	15.2
		Child nutrition	1	3.0
		Maternal mental health	2	6.1
		Equity impact of the intervention	1	3.0
		Formative research /process evaluation	4	12.1
		Economic evaluation (cost - effectiveness analysis)	5	15.2
		Programme scale up/coverage	2	6.1
4	Type of study design used in included study	Cluster randomised control trial	8	24.2
		Trial protocols	3	9.1
		Controlled (before and after) study	3	9.1
		Longitudinal prospective study	1	3.0
		Implementation research	2	6.1

SN	Characteristic of included study	Sub-category	Freq	%
		(coverage and scale up)		
		Systematic reviews and meta analysis	2	6.1
		Others (e.g. secondary analysis of trials/studies)	14	42.4

3.3.2. Scope of previous studies

The range of areas within the health sector where participatory women's groups have potential applications is wide and still evolving. Types of studies that have been conducted, analysed or inferences made using participatory women's group approach include: (1) assessment of the equity impact of using the women's group intervention, (2) impact of women's groups intervention on maternal health, (3) on neonatal/perinatal health, (4) on child nutrition, (5) on maternal mental health, (6) cost-effectiveness analysis of the participatory women's group approach in reducing neonatal mortality) and (7) process evaluation and estimation of coverage and project scale up.

3.3.3. Characteristics of included studies and their study designs

The large scale published trials or studies which utilised the participatory women's groups approach to improve maternal and newborn health outcomes are a relatively new development; mostly from 2004 onwards starting with the Makwanpur Trial in Nepal (Manandhar et al. 2004). This trial was the first cluster randomised controlled trial of a participatory learning and action (PLA) intervention on a large scale and it was largely

premised on the findings of a previously conducted large scale maternal and newborn health project, the WARMI project (Howard-Grabman, 1993).

Subsequently, several cluster randomised control trials that used participatory women's groups have been conducted in India by Tripathy et al. (2010), More et al. (2012), Tripathy et al. (2016), in Bangladesh by Azad et al. (2010), Fottrell et al. (2013) and in Malawi by Lewycka et al. (2013) and Colbourn et al. (2013). Most (77%) of these cluster randomised controlled trials or their secondary analyses have been co-funded by UK DfID and UK based research institutions or charities, and majority (93.8%) has published their findings in international journals. Further dissemination of these findings in journals published in low income countries or in open access journals may help in ensuring that more practitioners learn and apply this approach in areas or countries that have a high burden of maternal and neonatal deaths. The main primary research areas addressed by these studies that used participatory women's groups are; to improve perinatal/neonatal health (41%) and maternal health (15.2%) outcomes amongst rural or poor women in low income countries of Asia and Africa with high maternal and neonatal mortality rates.

An indication of the evolving and early developmental stages of the concept of the participatory women's group is the fact that none of these cluster randomised controlled trials or their secondary analyses have documented in their respective studies any standardised or even a working definition of 'participatory women's groups' except for a general allusion to the original pioneering work by the WARMI study reported in Howard-Grabman (1993) by most (93.8%) of the included studies. There is in addition no reported standard method for implementing the women's group; thereby yielding/resulting in a range of variations in how different groups were formed, including their membership composition. This suggests the need for further empirical and qualitative research to clarify the conceptual basis and standardise the method(s) for applying the participatory women's groups approach.

More than two thirds (78%) of the studies (both primary trials and their secondary derivatives) that implemented the participatory women's groups approach, utilised quantitative research methods in conducting their studies. Only three secondary studies used solely qualitative research methods, whilst four secondary studies used mixed methods. The seven secondary studies (three qualitative and four mixed methods) attempted to provide explanations of the mechanisms accounting for the observed impact of participatory women's groups on maternal and neonatal health outcomes. In addition, most (91%) of the studies used participatory women's groups approach as the only intervention whilst a few combined them with other interventions or health systems strengthening activities with previously known or documented effectiveness

3.3.4. Outcomes reported in the included studies

The eight identified cluster randomised controlled trials that used a participatory women's groups approach were mostly concerned with reductions in perinatal/neonatal mortality as their primary outcomes.

A review paper, (Prost et al. 2013) assessed seven trials (that used the participatory women's group approach) and reported significant reductions in neonatal mortality rates of up to 23% (odds ratio 0.77, 95% CI 0.65-0.90) as well as reductions in maternal mortality rates of up to 37% (odds ratio 0.63, 95% CI 0.32-0.94). However, one of the trials that was conducted in an urban slum of Mumbai, India (More et al. 2012) reported lack of any effect of participatory women's groups on maternal or neonatal mortality.

3.3.5. Findings related to underlying assumptions or mechanisms of action synthesized from included studies that utilised a qualitative research method

Three out of the seven qualitative studies deduced possible mechanisms through which women's groups exert their influence in reducing maternal and neonatal mortality to be as

follows; women's groups facilitate discussions of the reasons why mothers and newborn infants die in the community and women's groups 'learnt together' through story telling (Morrison et al. 2005, p.3). Another study identified the potential mechanism of action of participatory women's groups as related to capacity building of the women's groups which eventually resulted in an increased ability of the community to act on issues of concern (Morrison et al. 2010). One of the included study also highlighted some social factors such as encouraging participation through conscientization, engagement of women's groups with their wider community, working closely with vulnerable groups (especially pregnant women), and appreciating the felt needs and cultural context that influence local uptake of health information (Rath et al. 2010). One other qualitative study used FGDs to derive contingent valuation scenarios for willingness to pay for participatory women's group activities by community members (Borghi et al. 2007).

Two qualitative studies were undertaken by Rosato et al. (2006) and Rosato et al. (2009) in Malawi. The first qualitative study assessed how women's groups perceived and prioritised maternal health problems, including their perception of the severity of maternal illness by group members which was based on whether it led to death rather than whether it occurs commonly (Rosato et al. 2006). While the second qualitative study assessed how women's groups perceived and prioritised neonatal health problems including the fact that women's groups members "do not define the neonatal period according to any epidemiological definition" (Rosato et al. 2009, p.168); and the last qualitative study was essentially a description of the community mobilization (women's groups) intervention based on the project documents (Rosato et al. 2010).

3.3.6. Research gaps/limitations

Some methodological limitations observed in the quantitative research methods during the scoping review include the susceptibility of cluster-randomised control trials to bias and

ethical concerns (Tripathy et al. 2010; Azad et al. 2010; More et al. 2012; Fottrell et al. 2013; Lewycka et al. 2013; Colbourn et al. 2013; Tripathy et al. 2016). This is because there are ethical and practical challenges related to obtaining consent of groups within a cluster (since the unit of randomization is a cluster) in a cluster randomised trial, so in practice only the permission of gatekeepers was obtained as 'proxy' consent for all those that fall within a cluster; another related issue is the challenge of ensuring post-trial access within clusters. In addition, there are also methodological challenges that can result in bias (including selection bias) during cluster randomised trials; such as heterogeneity of populations within a cluster as well as the inability to adequately conceal treatment allocations under practical real world conditions.

The limitations observed in the studies; that utilised qualitative research methods were varied (Morrison et al. 2005; Rosato et al. 2006; Borghi et al. 2007; Rosato et al. 2009; Rath et al. 2010; Morrison et al. 2010). The limitations include the following; some women's group facilitators did not always adhere to the participatory research methods (Morrison et al. 2005), language translation (of transcripts) in some qualitative studies may have caused loss of meanings (Morrison et al. 2010), thus affecting any inferences that were made. Additionally, in one of the studies, researchers relied on data collected and analysed by staff involved in the intervention's implementation and some of the intervention's shortcomings may have been under-reported (Rath et al. 2010). While in another study, staff turnover was quite high, for example, in one study, 18 out of the 36 recruited facilitators for the participatory women's groups resigned (whenever they got a better paid job) during the course of the trial (Nahar et al. 2012).

3.3.7. Recommendations synthesised from the included studies

Research

More studies are needed to assess the effects of the participatory women's groups approach on maternal morbidity and mortality in different settings as suggested in the study conducted in Nepal (Manandhar et al. 2004).

Further research is needed to understand and scale-up the participatory women's group approach in large populations with little access to health services, including different delivery mechanisms of the intervention as well as how it can be embedded within government programmes as suggested in the study conducted in India (Tripathy et al. 2010).

Qualitative research is required to investigate how the participatory women's group approach could be adapted to translate these increases in knowledge into improvements in health outcomes that may be observed at the population level as suggested in the study conducted in Nepal (Borghi et al. 2007; Morrison et al. 2010).

Policy

Women's groups offer a sustainable and scalable approach for improving child survival; and the participatory approach using women's groups is cost effective as suggested in the study conducted in Nepal (Morrison et al. 2010).

Policy makers need to take into consideration the perceptions of local women about maternal and neonatal health issues as suggested in the study conducted in Malawi (Rosato et al. 2006).

Practice

Improved perinatal practices or behaviours together with empowerment of women can improve perinatal health outcomes as suggested in the study conducted in Nepal (Wade et al. 2006).

Participatory women's groups could complement or be a potential alternative to health-worker led interventions such as community health workers who facilitate women's groups in some settings as suggested in the study conducted in India (Tripathy et al. 2010).

The women's groups approach may be more difficult to achieve in settings where further mortality reduction is largely dependent on improvements in health service access and quality; as suggested in some studies conducted in India (Rath et al. 2010) and Nepal (Sharma et al. 2016).

3.4. Discussion and conclusions

3.4.1. Strengths and limitations of this scoping review

Scoping reviews by their nature are very useful for the "assessment of the potential size and scope of available research literature" Grant and Booth (2009, p.101) but they usually are affected by the lack of inclusion of a quality assessment criteria for articles included in the review (Grant and Booth, 2009). In addition, the scoping review itself is based on the use of search terms and secondary data (published and archived data) with its attendant limitations of being affected by the accuracy and veracity of the authors, the articles included in the review, search terms that were used as well as the repositories that were searched. Finally, only articles that were available and in English language in the listed databases were included in the review which may potentially exclude articles that are not written in English except

where translated versions exist. However, the use of different repositories/databases during this review improved the chances of also obtaining most of the published research conducted using women's groups as well as some grey literature on the participatory women's groups approach.

3.4.2. Implications for future policy/practice/research

There is a need to commission further research in different settings to fully understand how participatory women's groups work as well as provide better conceptual clarity of the participatory women's groups (including a standard or working definition) as the use of the approach is scaled up in different contexts.

3.4.3. Summary

The use of participatory women's groups for improving maternal and newborn health outcomes is an emerging approach that needs further (qualitative) research to better understand the underlying social mechanisms and to complement the results obtained from the large scale cluster randomised community trials that have already been conducted. This is important because of the demonstrated effectiveness of the participatory women's groups approach in improving maternal and neonatal health outcomes especially in LMICs.

In the light of available evidence, there is currently a report on WHO recommendation on community mobilization through facilitated participatory learning and action cycles with women's groups for maternal and newborn health (World Health Organization, 2014); and some NGOs have taken it a step further by producing a guide on how to use participatory women's groups in promoting maternal and neonatal health (BADAS et al. 2013).

This chapter has described the scope of the research that has been done with women's groups; this has helped in focusing my thesis on the processes involved in establishing women's groups, including how they work as well as the potential conceptual linkage between

participatory women's groups and other social constructs in the fields of health promotion and community psychology.

The major gaps that the scoping review has revealed include the lack of any study using participatory women's groups that deliberately studied the potential effect that participation (via using participatory research approaches) may have on social capital and empowerment amongst women's groups' and community members. Similarly, there are also no reported research that studied the possible effect of participation on the maternal health literacy (capacity) of women's group members and no reported primary qualitative research that has studied the workings of the women's groups themselves.

The next chapter is the methodology and methods chapter where I describe the study settings, research paradigm and participatory research approaches used in my research thesis as well as the data collection and analysis methods that I used during the different phases of the fieldwork.

Chapter Four: Methodology and Methods

4.1. Preamble

This section describes the settings where the research project was conducted in Northern Nigeria as well as the different phases of the maternal health research project that were conducted during the fieldwork stage. The map of Kumbotso, Kano State and selected pictures of women's group members in the two study communities are also shown in Appendix III.

4.2. Description of study settings

Northern Nigeria

Nigeria is the most populous and the largest country in the West African Continental Sub-Region. Nigeria is a geographically and ethnically diverse country which is administratively sub-divided into six geopolitical zones (GPZs). There are 36 states and a Federal Capital Territory (FCT) which are spread across the six geopolitical zones of the country. The geopolitical zones are the North East GPZ, North West GPZ, North Central GPZ, South South GPZ, South West GPZ and South East GPZ. Kano state is located in the North West geopolitical zone of Nigeria. Kano state is the most populous state in Nigeria according to the 2006 Census results (NPC and NBS, 2006) with more than 9 million inhabitants and with a currently projected population of 13.4 million inhabitants (MNCH2 Project, 2018). Kano State shares borders with Jigawa State at its north-east boundary, Katsina State at its north-west and with Kaduna State at its southern boundaries respectively.

Kano State

The population of Kano state is predominantly rural, but around one-quarter of its population live in the urban areas within the state; mainly within Kano Metropolis which is the third largest metropolitan area in Nigeria after Ibadan and Lagos. Kano metropolis consists of eight metropolitan local government areas (LGAs) out of a total of 44 LGAs that make up the state.

Kano state has a predominantly Muslim population that generally adhere to an Islamic culture. The common family structure is a mix of monogamous and polygamous variants and the extended family system is the norm. The ethnic composition of the state is relatively homogenous, predominantly inhabited by Hausa and Fulani ethnic groups with a mix of other smaller ethnic groups especially in the urban metropolitan setting. The main occupation of the population in the rural areas is subsistence farming and animal husbandry.

Kano is the main commercial centre of Northern Nigeria, with a long history of being a major trading centre on the Trans-Saharan Trade Route. Despite being a hub of commercial activities, the poverty level in Kano State is high with about twenty percent of the population in the poorest wealth quintile (National Bureau of Statistics and United Nations Children's Fund, 2016). The drivers for the poor health situation in the North West GPZ include political, socio-economic and cultural factors but in recent times a new dimension has worsened the maternal health situation with increasing gender based violence arising from insecurity and activities of insurgents in the northern part of Nigeria (Nieburg, 2012).

4.3. Specific maternal and newborn health and health literacy indices of Kano and North West GPZ of Nigeria.

The educational attainment indices of the North West GPZ of Nigeria are poor even by Nigerian standards. For example, the North West GPZ has a literacy rate for young women of 38% and for young men of 57.5% compared with the national average of 59.3% for young

women and 70.9% for young men respectively (National Bureau of Statistics and United Nations Children's Fund, 2016).

The national maternal mortality ratio (MMR) is 576/100,000 live births; (95% CI is 500–652) (NDHS, 2013). The North West GPZ has an infant mortality rate of 87 per 1000 live births and a neonatal mortality ratio of 45 deaths per 1000 live births compared with national values of 70 per 1000 live births and 39 per 1000 live births respectively (National Bureau of Statistics and United Nations Children's Fund, 2016). The MMRs at the level of States (including Kano) in Nigeria are not known, this is mainly because of a dysfunctional health information management system. Different local sources or studies give varying results, however anecdotal reports suggests that the MMR in Kano is higher than the national average.

There are also wide disparities in the health indices between urban and rural dwellers because, place of residence in Nigeria is closely associated with access to health and social services (National Bureau of Statistics and United Nations Children's Fund, 2016).

Literacy rate as measured by educational attainment is poor in Kano for females, at 46.1% for young women 15 – 24 years old and 72.5% for young men (National Bureau of Statistics and United Nations Children's Fund, 2016). It is pertinent to note that, the literacy rate for young men is only marginally higher than the national average whilst the figure for young women is lagging behind; this may be a reflection of the social status of women in the state.

Kano has an infant mortality rate of 112 deaths per 1000 live births and a neonatal mortality rate of 69 deaths per thousand live births (National Bureau of Statistics and United Nations Children's Fund, 2016); these statistics paint a picture of the poor state of the maternal and neonatal health situation in Kano and the North West GPZ of Nigeria.

The study area - Kumbotso Local Government Area

Kumbotso LGA has a population of 295,979 persons (NPopC 2006). Kumbotso LGA has both rural and urban settlements. It is made up of eleven political wards consisting of Panshekara, Guringawa, Dan Maliki, Unguwar Rimi, Kumbotso, Kureken Sani, Mariri, Challawa, Chiranchi, Danbare and Naibawa political wards. Kumbotso political ward is composed of mostly rural settlements; Tudun Kaba as well as Tsamawa communities are located within Kumbotso political ward. Panshekara political ward is composed of mainly urban and peri-urban settlements; Kayi community is a peri-urban settlement located within Panshekara political ward.

The rural community currently residing at Tudun Kaba are remnants (that refused to relocate because they didn't want to leave their farmlands) of the original community which faced severe flooding in 2001 and were relocated to the outskirts of Kumbotso Town on the orders of the local government. The population of Tudun Kaba is 1212 inhabitants (Cold Store Registry, Kumbotso LGA). Members of Tudun Kaba community that are still living at the old (original) site of Tudun Kaba have no social amenities such as health facilities, motorable roads, primary schools, pipe borne water provided by the government and they are not connected to the national electricity grid.

The rural community living at Tsamawa are not much better off because they are also not linked to the national electricity grid and have no health facility located within their community. Tsamawa has a population of 1652 inhabitants (Cold Store Registry, Kumbotso LGA).

The community residing at Kayi which is a peri-urban location have some access to pipe borne water, electricity and primary school but the road to the community is in a bad

condition and there is no health facility located within their community. Kayi has an estimated population of 1892 inhabitants (Cold Store Registry, Kumbotso LGA).

These communities were selected for inclusion in the research by the Kumbotso LGA - Community Advisory Board (CAB) partly because they are perceived by the CAB as having poor maternal and newborn health indices within the LGA. The inhabitants of Tsamawa and Tudun Kaba are rural, predominantly poor, consisting largely of subsistence farmers and fishermen (fishing in the tributaries of the Challawa river which criss-cross the area), with most of the population living below the poverty line. The socio-economic features of the selected communities are comparable with similar communities within the North-East and North-West GPZ of Nigeria.

The maternal mortality ratio of Kumbotso LGA is not known because of the dysfunctional health management information system in the state, but it is likely to be high based on anecdotal reports from health facility staff in the LGA.

The main referral health facilities that are within the proximity of the selected communities are the Comprehensive Health Centre (CHC) located in Kumbotso political ward, which is a 25-bed health facility (located about twenty kilometres away from Kayi, and approximately five to seven kilometres away from Tudun Kaba and Tsamawa) and the Panshekara Primary Health Centre (PHC) in Panshekara ward (located about two kilometres away from Kayi settlement).

The Panshekara PHC has no doctor and is fully run by community health workers while the CHC has doctors (as well as nurses and support staff) who are employed and visit from the Teaching Hospital located in the capital Kano; these staff are on secondment on a daily shift basis based on an arrangement between the Kumbotso LGA and the urban tertiary hospital (Aminu Kano Teaching Hospital) to run the Comprehensive Health Centre in return for the

Teaching Hospital using the CHC Kumbotso as a training site for its undergraduate and postgraduate students.

4.4. Methodology used during the research project

I used participatory research approaches in my research project and the main underlying principles in the participatory research methods or collaborative types of action enquiry (for the researcher and the researched) are that "the research outcome is grounded in the researcher's own experiential knowing, and second, that research participants have a right to participate in research that is about them" (Illing, 2013, p.290). Participatory research is a form of partnership between co-learners, co-subjects or co-researchers and the hallmark of this research approach is that the participants take part in informing the design of the research and thus influence the kind of information that is produced about them.

4.5. Ontology and epistemology of the participatory research paradigm

Paradigms are generally " shared world view that represents the beliefs and values in a discipline and that guides how problems are solved" (Schwandt, 2001, cited in Chilisa, 2015, p.1) and they generally tend to be associated with certain methodologies (for example "a positivistic paradigm typically assumes quantitative methods" (Chilisa, 2015, p.2). The transformative/emancipatory paradigm (Chilisa, 2015) is a close fit to participatory research approaches that I used during the fieldwork. The transformative /emancipatory paradigm is influenced by a variety of theories such as critical theory, postcolonial discourses, feminist theories, race-specific theories and neo-Marxist theories. The ontological basis for the transformative/emancipatory paradigm is that there are multiple realities which are shaped by "social, political, cultural, economic, race, ethnic, gender and disability values"(Chilisa, 2015, p.6). In this paradigm, the nature of knowledge is focussed on "dialectical understanding aimed at critical praxis" (Chilisa, 2015, p.6), in other words "knowledge is true, if it can be turned into practice that empowers and transforms the lives of the people" (Chilisa, 2015,

p.12). The transformative/emancipatory paradigm is an emergent paradigm and is still in its formative stages. Its ontology is subjective-objective; in other words, "reality is the result of an interaction and how the mind has engaged with it" (Illing, 2013, p.290).

The epistemologic leanings of the participatory/emancipatory paradigm maintains that knowledge is true if it transforms and empowers people whilst ensuring that there is no power hierarchy between the researched and the researcher because "true knowledge in this context lies in the collective meaning-making by the people, which can inform individual and group action that improves the lives of the people" (Chilisa, 2015, p. 12). The participatory /emancipatory paradigm views research as a 'moral and political activity' (Chilisa, 2015, p. 12) that requires the researcher to commit to a value position of being a co-learner, co-participant and co-researcher.

4.6. Qualitative research methods used during the research project

I preferentially selected and used qualitative research methods during all the phases of my research project because of the type of research that I carried out (participatory research which was context specific). Qualitative research methods are suited for this purpose because "qualitative research is well suited for understanding phenomena within their context" (Bradley et al. 2007, p.1759; Yardley, 2000, p.215) and "many qualitative research methods are explicitly concerned with the particular situations and experiences of the individuals participating in the study". Qualitative research methods are difficult to define and have "immense diversity" because they "embrace such different methodologies and associated epistemologies" (Yardley, 2000, p.216). The features or principles of good qualitative research include "sensitivity to context; commitment and rigour; transparency and coherence; impact and importance" (Yardley, 2000, p.219).

4.7. Review of selected reports of CBPR methods

A variety of health or health-related problems in LMICs have been researched using the CBPR approach; they include community-based needs assessment in Ardabil, North west Iran (an area of high socio-economic deprivation) by (Ahari et al. 2012). The study by Ahari et al. (2012) adhered as much as possible to the CBPR approach and identified best practices that facilitated its work such as; working with local NGOs, getting facilitators with a high spirit of volunteerism, community participation at all stages of the research, setting up a community organization structure to manage the process and minimising the number of “university” researchers on the collaborative project. However, the study by Ahari et al. (2012) faced a number of challenges such as; resistance from some of their researcher colleagues to the idea of a “participatory approach” to conducting research, lack of cooperation by some non-health government departments, inability to access demographic data, few inclusion of women because of cultural reasons. The findings from this study by Ahari et al. (2012), highlight some of the challenges and attractions inherent in applying the participatory approach when conducting research.

A CBPR study by Almedom et al. (2003) looked at maternal psycho-social wellbeing in Eritrea. In this study, some of the principles of the CBPR approach were followed at the reflection stage but there was no evidence of any action taking place to influence the wellbeing of respondents. However, the use of community maps and history lines of the communities where these women came from made a good impression on them and is a pointer to the utility and validity of using art based methods during CBPR.

In a study by Kobeissi et al. (2011) in Beirut, Lebanon, CBPR was used to evaluate a psycho-social intervention to improve the mental and reproductive health of women living in disadvantaged areas. The study by Kobeissi et al. (2011) found that setting up a community advisory committee (consisting of government and NGO staff including senior health facility

staff working in the study area) as well as a local women's committee consisting of professional and lay women from the same study communities helped in ensuring that the process was participatory because everyone was involved in the planning and implementation of the CBPR; and were themselves the subject of evaluation in the course of the study. The feedback these groups gave during the evaluation showed that the women in the local community have been empowered with knowledge and "voices". Another useful lesson from this study by Kobeissi et al. (2011) is the importance of setting up community organizations e.g. community advisory committees as well as a research team that is complementary and with clear terms of reference for their activities.

In a different CBPR study conducted in the Dominican Republic to explore community perceptions of MNCH services by Foster et al. (2010), the researchers used a combination of qualitative and quantitative methods, and clearly stated their intention a priori to use the CBPR as both a process and a catalyst for change. The study by Foster et al. (2010), used CBPR process best practices through ensuring community participation at all stages of the research. However, they were careful in presenting their findings to local hospital personnel/authority figures who might regard the findings of their study as criticising their job activities; this can be a challenge faced by CBPR in some settings.

In another study conducted in Karachi, Pakistan by Karmaliani (2009), the challenges of fitting a CBPR study to a grant application schedule was highlighted; particularly how the lack of funding and the complexity of a grant seeking process can contribute to the dearth of CBPR studies that are conducted especially in the developing world.

In a study conducted in South Africa which used the CBPR approach for drawing up a research agenda in an identified community (Mosavel et al. 2005), this study highlighted the range of purposes, issues and methods in the health sector for which the CBPR approach can

be applied to. The reviewed CBPR studies indicate the potential utility, feasibility and challenges of using the CBPR approach for assessing or addressing health problems across the globe. I borrowed ideas and learned from these CBPR studies; and the insights obtained include the importance of working with a local community advisory board, conducting a needs assessment, making long term funding arrangements, using qualitative data collection and analysis methods when designing, implementing and evaluating my research project.

4.8. Overview of data collection methods used in the research project

I predominantly used qualitative research methods to collect data during the field work, with some (minimal) use of registers to collect basic quantitative data which I used to summarise selected key and supportive implementation activities conducted by the women's groups during the implementation and evaluation phases respectively.

During the onset of the inception phase as well as at the end of the evaluation phases respectively, qualitative methods including key informant interviews (KIIs) were used to collect information from local maternal health "gatekeepers" such as the local traditional leader (male), local religious leader (male), local TBA (female), and local traditional barber-surgeon (male) in the communities where the research was conducted. Focus group discussions (FGDs) were also conducted to obtain information from women's groups members as well as other female community members in the study communities during the inception and evaluation phases respectively.

In addition, there were routine collection and analysis of transcripts of women's group meetings that took place regularly at the inception/design and implementation phases of the research project respectively. The attendance sheets for women's groups meetings, transcripts of women's groups meetings as well as field notes written by the female facilitators (see Section 5.3.2 for a discussion of their roles) during the inception/design and implementation

phases were also reviewed by the researcher because they contributed towards understanding of contexts and held documented records of activities that were conducted.

There was also collection of stories of significant changes as narrated by women's groups members regarding maternal and newborn health knowledge and/or skills attributable to the research project and/or activities of the women's groups themselves. These stories were either volunteered by women's group members spontaneously or was elicited by female facilitators during group meetings.

4.9. Qualitative data analysis

The implication of having diverse types of qualitative research methods is that there is likely to be a corresponding plethora of qualitative data analysis methods. However, it is important to note that there are no rigidly uniform methods of qualitative data analysis and "many experts have argued that there cannot and should not be a uniform approach to qualitative methods" (Bradley et al. 2007, p.1760). However, there are some general strategies such as taxonomies, themes and theory that have been suggested as been useful to adopt when conducting qualitative data analysis (Bradley et al. 2007, p.1760).

I generally used 'themes' in analysing the qualitative data that was collected during the maternal health literacy research project that I conducted. Themes "are recurrent unifying concepts or statements about the subject of inquiry" (Boyatzis, 1998, cited in Bradley et al. 2007, p.1760). Themes are "fundamental concepts that characterize specific experiences of individual participants by the more general insights that are apparent from the whole of the data" (Ryan and Bernard, 2003, cited in Bradley et al. 2007, p.1760).

The general stages involved in thematic data analysis include "reading for overall understanding" (that is data immersion even before data coding takes place), followed by "coding of the qualitative data" (codes are labels or tags given to documents or segments of

documents to help in grouping key concepts while preserving the context in which these concepts occur) then followed by "developing the code structure" (using either an inductive/grounded approach or a deductive/framework approach) and followed by "finalizing and applying the code structure" (this takes place at the point of theoretical saturation) and finally generating results or themes (Bradley et al. 2007, p.1761 - 7). Ultimately, the utility of thematic analysis is in its flexibility that enables it to be used across a variety of theoretical frameworks allowing analysis to be situated in a realist (essentialist) method or constructionist or even a contextualist method (Braun and Clarke, 2008).

4.10. Overview of data analysis methods used during the research project

I used thematic analysis (as described in the preceding section) to analyse collected data during the field work with minimal use of basic (univariate) statistical analysis to summarise selected implementation activities that were conducted by the women's groups during the implementation and evaluation phases of the fieldwork. The following are the data analysis approaches used for the different qualitative data types.

4.10.1. Analysis of focus group discussions (FGDs) and interviews (KIIs)

An inductive approach was initially used to analyse and obtain themes from the transcripts of the FGDs and KIIs conducted during the inception phase of the research project while a deductive approach was used in analysing the transcripts of interviews and FGDs conducted during the evaluation phase of the research project. The stages of qualitative data analysis using the thematic analysis approach has been given earlier in this chapter.

The details of findings from the first and second set of FGDs and KIIs conducted during the inception and evaluation phases respectively are presented under the respective chapters while their thematic matrices are included in Appendix IV.

4.10.2. Analysis of stories of significant change

The stories of significant change were initially analysed using the MSC method and they also underwent secondary analyses by thematic analysis using a deductive approach. The details of the findings from the collected stories of significant change are given in the chapters on the implementation and evaluation phases respectively. The thematic matrix for stories of significant change is shown in Appendix IV.

4.10.3. Analysis of project documents and records

Other project documents including minutes of women's group meetings, facilitator's field notes together with summary statistics on local maternal health events obtained from the women's group monthly registers of maternal and neonatal health events were also reviewed. More details are provided in Chapter 7, section 7.7. The tables showing the summary statistics of project documents and records are provided in Appendix V.

4.11. Data management and quality control

Data management is an important step in any research; field notes and tape recorders were used during KIIs, FGDs, and group meetings after obtaining informed consent from respondents during the fieldwork. The paper based records and digital recorders were kept in dedicated drawers with locks in my office at the Department of Community Medicine, Bayero University Kano, Nigeria after saving copies onto my personal laptop.

All field notes were written in English by the female facilitators, while the transcripts from FGDs, KIIs and stories of significant change were translated from Hausa to English during analysis by me in close collaboration with the Hausa translator. The issues arising and themes encountered in the transcripts during translation or analysis were discussed and agreed upon by the research team and/or during women's group meetings to arrive at a common or acceptable understanding.

A female Hausa translator was part of the research team and participated in the training workshop for the women's group facilitators so that she understood what the research project was aiming to achieve, as well as to provide her with a basic introduction to participatory research approaches as well as qualitative research methods. The inclusion of the language translator in the research project training is a recommended practice so as to reduce translation bias by elevating the status of a translator to that of co-researcher (Kirkpatrick and van Teijlingen, 2009). This empowers the translator to be able to work as an equal with research team members which is in the spirit of participatory research.

Data quality during the project was ensured through regular supervision, regular meetings, intensive training (these included dress rehearsals/role plays of the activity they were about to conduct as well as revising 'best practices' of facilitation, interviewing and communication skills) conducted before the onset of the project to research members and on the job training/mentoring offered by me throughout the fieldwork. All of these was greatly assisted by the high level of commitment by the women's group members and the female facilitators.

Finally, all the collected data were backed up on the one terrabyte encrypted flash drive purchased for the purpose of the research project.

4.12. The research field work

The research project was categorised into three phases for the purpose of having a clear framework for describing the research project. The three phases are the design/inception phase, followed by the implementation phase and the evaluation phase respectively. The thesis reports the project according to these three main phases in relation to the fieldwork and data collection. However, in practice, there was significant overlap between the phases as it can be argued that the inception/design phase of the research project commenced right from the literature review/methodology/preparatory stage, while the implementation phase of the

research project actually started from the first contact with the study communities during methodology/preparatory stage, whilst the evaluation phase of the research project is actually a process evaluation that took place continuously during the fieldwork, whilst the project was ongoing.

4.13. The inception / design phase of the research project

This phase consisted of several components which are briefly mentioned below and are described in more details in Chapter 5.

4.13.1. Engaging with the Community Advisory Board (CAB)

The Community Advisory Board (CAB), Comprehensive Health Centre, Kumbotso, Kano is a joint community and health facility committee that I worked with in the spirit of CBPR and minimising the effect of my positionality to conduct the research project. Working together with the CAB, I conducted the following activities

- a) Obtained permission for the research as well as permission for community entry to initiate and facilitate community participation for the research project;
- b) Facilitated the nominations, training and recruitment of the three female facilitators for the women's groups/research assistants and one translator for the research project;
- c) Facilitated the selection of the communities where the research project was conducted;
- d) Established two women's groups in the two study communities of Tudun Kaba and Kayi.

4.13.2. Inception phase data collection: focus group discussions (FGDs)

The female facilitators and I, identified and recruited (on a first come first served basis) fourteen women who were interested in enlisting into the women's groups as well as another fourteen women who were not of child bearing age and/or not interested in joining the women's group were selected for the FGDs in the three communities where the research

project was conducted. This gave rise to a total of five FGDS that were conducted during the inception/design phase of the research project (see Table 4.1 below) .

4.13.3. Inception phase data collection: key informant interviews (KIIs)

The community advisory board and I identified a list of local maternal health gatekeepers consisting of the village head, religious leader (Imams), local traditional barbers (wanzami), local traditional birth attendant (TBAs) in the communities. The above listed individuals were approached in the three communities and interviewed by me. This gave a total of nine interviews that were conducted during the inception phase of the project (see table 4.1 below).

Table 4.1. FGDs and KIIs conducted during the inception phase of the research project

SN	Name of community	Type of interviews and group discussions	Persons responsible for conducting
1	Kayi community (peri-urban study site)	FGD with female community members	Female moderators supported by me
		FGD with women's group members	Female moderators supported by me
		KII with Imam	Me
		KII with Village head	Me
		KII with TBA	Me
		KII with traditional barber	Me
2	Tudun Kaba community (rural study site)	FGD with female community members	Female moderators supported by me
		FGD with women's group members	Female moderators supported by me
		Interview with Imam, local Islamic teacher and Village head	Me
		KII with TBA	Me

3	Tsamawa community (rural -control site)	FGD with female community members	Female moderators supported by me
		KII with Imam	Me
		KII with Village head	Me
		KII with TBA and TBA Apprentice	Me

4.13.4. Establishment of women's groups

Two women's groups were established in the communities of Tudun Kaba and Kayi, but none was established in Tsamawa, the comparison rural community. However, a small group of women consisting of the local TBA, the TBA's apprentice as well as the wife of the village head were constituted to serve as the focal point in Tsamawa for all activities related to the research project.

4.13.5. The facilitator-led participatory women's group meetings and participatory health needs assessment (auto-diagnosis sessions)

The newly formed women's groups in the two communities of Tudun Kaba and Kayi met monthly face to face and were facilitated by myself and the three trained female facilitators. The female facilitators and I made up the research team.

4.14. The central combined participatory planning meetings/workshop with the participatory women's groups

After the conclusion of the auto diagnosis sessions, a series of participatory planning meetings involving the women's group members of Kayi and Tudun Kaba communities as well as the research team members were held both centrally at Kumbotso Town, the local government headquarters. Similar participatory planning meetings were also held separately on-site in the two study communities of Kayi (peri-urban) and Tudun Kaba (rural) respectively with women's group members and female facilitators on different occasions. It was at these meeting sessions that the health literacy intervention was designed and refined so that the results of the participatory planning meetings informed the content and conduct of the implementation phase of the research project.

4.15. The implementation phase of the research project

4.15. 1. Peer-led participatory women's group meetings and peer-led participatory learning sessions with visual methods intervention

The implementation phase used the intervention designed during the participatory planning sessions conducted during the inception phase of the research project. This composite (complex) intervention consists of a peer-led participatory women's group, peer-led participatory learning sessions using visual methods using drawings/pictures of maternal and new born danger signs and healthy nutrition for mothers and newborns.

4.15. 2. Additional supportive project implementation activities

Additional supporting activities aimed at building the capacity of the participatory women's group members in the two study communities to conduct their activities in a sustainable and organised manner were also instituted. These are discussed in detail in Chapter 6.

4.15. 3. Project data collection (including supervision and monitoring)

Project data collection was done using supervision and monitoring tools during the implementation phase of the research project fieldwork; these tools include the women's group story telling template used to record stories of significant changes by women's group members, the women's group report and meeting attendance template for recording the minutes of the peer-led women's group meetings and participatory learning sessions, the women's group register of local maternal and newborn events used for recording health events affecting mothers and their newborns within the locality of the women's groups as well as the field notes/reports by the female facilitator for that community.

The project data collection tools consisting of the FGD guides, KII guide, storytelling template, women's group report and meeting attendance template, women's group register of

local maternal and newborn events and auto-diagnosis templates are provided in Appendix VI.

Table 4.2: Outline of documentary templates used during the implementation phase

SN	Name of community	Type of documentary record e.g. transcripts of story, meeting transcripts/register/facilitator field notes	Number conducted	Persons responsible for collation
1	Kayi community (peri-urban community) study	Total number of peer-led participatory women's group meetings held	14	Facilitator and I
		Total number of peer-led participatory (outreach) learning sessions held	8	Facilitator and I
		Number of reports of meetings	8	Facilitator and I
		Total number of stories collected	4	Facilitator and I
		Total number of income generating activities training conducted (Vaseline and Humra)	2	Facilitator and I
		Total number of registers submitted	8	Facilitator and I
2	Tudun Kaba community (rural study community)	Total number of peer-led participatory women's group meetings held	9	Facilitator and I
		Total number of peer-led participatory (outreach) learning sessions held	7	Facilitator and I
		Number of reports of meetings	4	Facilitator and I
		Total number of stories collected	3	Facilitator and I

		Total number of income generating activities training conducted (Vaseline and Humra)	2	Facilitator and I
		Total number of registers submitted	8	Facilitator and I
3	Tsamawa community (rural community) -control	Total number of peer-led participatory women's group meetings held	0	
		Total number of peer-led participatory (outreach) learning sessions held	0	
		Number of reports of meetings	0	
		Total number of stories collected	0	
		Total number of income generating activities training conducted (Vaseline and Humra)	2	Facilitator and I
		Total number of registers submitted	0	

4.16. The evaluation phase of the research project

The outputs/inputs that were co-agreed to be monitored and evaluated following the combined participatory planning meetings/workshops included:

- a) The transition of the participatory women's group from a facilitator-led to a peer-led participatory women's group in the two communities.
- b) Co-development and implementation of a health literacy intervention addressing the prioritised and locally perceived health problems of pregnant mothers and newborns delivered using the participatory visual methods approach by the peer-led participatory women's group on a fixed and outreach basis in the respective communities.
- c) Co-organization, co-planning and co-implementation of selected income generating activities training.
- d) Co-organization, co-planning and co-implementation of basic group strengthening activities such as election of group representatives, scheduling of participatory women's group meetings, basic record keeping, registration of the participatory women's group with the local government authorities, resource mobilization, stipends for buying second hand GSM/Android phones and sending basic meeting reports through Whatsapp (a social media application on android phones), development/updating the women's group register of local health events of pregnant mothers and newborns in their communities as well as providing light refreshments at participatory women's group meetings.
- e) Co-planning and co-implementation of a participatory monitoring and evaluation (MSC) method. The MSC method was used together with the second set of FGDs and KIIs that were

conducted with women and other maternal health gatekeepers in the community eight months (1st October 2016 to 30th May 2017) after the commencement of the research.

Four FGDs and four KIIs were conducted during the evaluation phase in the two study communities of Kayi (peri-urban) and Tudun Kaba (rural), while one FGD and two KIIs were conducted in the comparison community of Tsamawa (rural). Table 4.3 provides a summary of the second set of FGDs and KIIs conducted during the evaluation phase of the research project.

Table 4.3 : Outline of the second set of FGDs and KIIs conducted during the evaluation phase

SN	Name of community	Type of interview/discussion	Number conducted	Persons responsible
1	Kayi community (peri-urban study site)	FGD with female community members	1	Female moderators supported by me
		FGD with women's group members	1	Female moderators supported by me
		KII with Imam	1	Me
		KII with Village head	1	Me
		KII with TBA	0	
		KII with traditional barber	1	Me
2	Tudun Kaba community (rural study site)	FGD with female community members	1	
		FGD with women's group members	1	Female moderators supported by me
		Interview with Imam, local Islamic teacher, and Village head	1	Female facilitators supported by me
		KII with TBA	0	
3	Tsamawa community (rural control site)	FGD with female community members	1	Female facilitators supported by me
		KII with Imam	1	Me

		KII with Village head	1	Me
		KII with TBA and TBA Assistant	0	

4.17. Ethics and governance issues including informed consent and data protection

4.17.1. Ethical clearance to proceed with the field work

Ethics clearance/approval for the research project was obtained from the Aminu Kano Teaching Hospital, (AKTH) Kano Research Ethics Committee. This Research Ethics Committee is accredited by the University of Sheffield Research Ethics Committee/ScHARR Ethics Committee following an assessment of its credentials. The copy of the ethics approval letter from the Health Research Ethics Committee of Aminu Kano Teaching Hospital, Kano is shown in Appendix VII. Verbal informed consent was obtained from respondents/women's groups members during the fieldwork after reading out from the information sheets that clearly spelt out the purpose of the research, including risks and benefits. The copies of the informed consent form and information sheets used in the research project are provided in Appendix VIII. The co-researchers/participants had access and recourse at all times to the community advisory board (CAB) as well as the traditional recourse of redress, the religious or traditional leaders in their community for redress on any issue. In addition, community consent was sought and obtained from the village heads and elders when we physically met with them in the respective communities at the onset of the research project as well as on a continuous basis during field visits for group meetings, FGDs and KIIs. Data confidentiality was emphasized to all research team members and participants at every opportunity and during the training and, it was further maintained by keeping anonymised transcripts in a secure computer with password access.

4.17.2. Negotiating access to communities for the CBPR from local governance and political institutions

The political system in Nigeria operates at three levels or tiers which are at the federal/national level, the state level and the local government area (LGA) level. At the LGA level, the political structure is led by democratically elected political officials at the level of Kumbotso LGA. The communities where we conducted the research are located within the jurisdiction of Kumbotso LGA, and its leadership consists of Kumbotso LGA Chairman and Councillors who make up the highest political decision making body in Kumbotso LGA. The LGA chairman and his cabinet are in turn answerable to the Kano State Government, while the latter are subordinate to the Federal Government of Nigeria.

On the other hand, the local traditional ruling (emirate) system is still very powerful and influential in the study areas; the reign of traditional leaders is lifelong and not tenure based like their political counterparts. The traditional leaders are viewed as the custodians of local customs and traditions; they are better trusted by the local communities when compared with the political leadership in the LGA. The traditional rulers are all males and operate within a patriarchal system consisting of traditional village (maiunguwa) heads who report to the Traditional Ward Head (Sarkin Fulani/Dagacin Kumbotso) and Traditional Ward Head (Dagacin Panshekara) respectively; the ward heads all report to the District Head (Hakimi) and the District Head reports to the Emir of Kano (Sarkin Kano).

4.18. Ethical challenges in participatory research

Participatory research approaches have unique ethical dilemmas that confronts them; some include criticism for lacking scientific rigour (Buchanan et al. 2007). However, some authors have proposed a set of principles to guide the ethical conduct of CBPR (Banks and Manners, 2012; Bastida, 2010).

I encountered and reflected upon some ethical issues arising from the specific nature of the CBPR approach that I used in conducting my research. The following are some of the ethical issues that I reflected upon or encountered during my research.

a) The ethical questions that troubled me during this research are related to the opportunity costs incurred by women's groups' members who were involved in the maternal health literacy research when they forego some of their domestic chores or petty trading to participate in women's group activities as volunteers. However, the time used by the women's groups was restricted to time spent on meetings or community activities and which they consider to be their contribution towards improving their own (maternal) health as well as that of their communities, in form of their social responsibility.

b) Inadequate knowledge regarding CBPR by members of Institutional Ethics Committee in Northern Nigeria as evidenced by the insistence of one of the members "on the need for me to submit a questionnaire, just like other research proposals" even after repeated explanations and submission of a typed copy of my initial proposal indicating that I wanted to use CBPR. This was resolved following a face to face explanation in person by me to the ethics committee as well as a general increase in awareness about participatory research approaches within the local academic circle.

c) The negotiations for establishing a flat or level power relationship between the women's groups (my co-researchers) and I, was partly done through third parties, the trained female facilitators. I was only allowed occasional direct contact with the women's groups based on our agreement with the traditional gatekeepers and out of respect for the culture of the community; the use of female facilitators who had direct and regular contact with the women's group was a deliberate strategy for producing the optimal female to female trust and

bonding that helped the women's groups in shedding cultural or traditional 'shackles' and participating fully during the research project.

d) The existence of a CAB in the study area provided strong support and incentive for conducting CBPR because as documented in a study (Buchanan et al. 2007), CABs help in facilitating or securing community approval or consent for CBPR. The paper by Buchanan et al. (2007) also highlighted that the CBPR approach is considered by some adherents to be an "ethical" research approach in itself that justifiably deserves a fair share of funding resources (Buchanan et al. 2007).

e) There were varying degrees of participation by the co-researchers during the different phases of the fieldwork; it was optimal during the design/preliminary and implementation phases but only fair during the evaluation phase of the project. The latter was partly due to lack of sufficient time to build the technical capacity of the co-researchers to conduct qualitative data analysis during the evaluation phase as well as dwindling finances. This has also been noted by some authors (Armstrong, 2011).

4.19. Summary

This chapter has provided an overview of the three phases of the intervention with some brief explanations about the underlying methodology and methods used during the research project as well as the general data collection methods and analysis used in this research project. A description of the study settings, local governance structures and ethics processes were also provided.

The next chapter is the inception/design phase chapter which provides additional details of the inception phase including the descriptive findings and lessons learnt.

Chapter Five: The Inception and Design Phase of The Research Project

5.1. Preamble

This chapter describes in more detail the process of gaining access to the communities selected for the research project as well as the design of the data collection instruments/templates and specific interventions used during the research fieldwork, as has already been outlined in Chapter 4. There will also be an explanation of the steps involved in setting up the research project, lessons learnt during the process as well as the presentation of the findings and analysis of the auto-diagnosis (participatory health needs assessment) sessions and the first set of FGDs and KIIs that were conducted in this phase.

5.2. Key elements of the CBPR approach

The CBPR approach was adapted for use in this study based on literature review which showed the potential utility, feasibility as well as challenges of using this approach to assess and address health problems; the CBPR approach has been reviewed in the preceding chapter. It is important to set up community organisations or structures like a CAB as well as a research team that work together, this is one of the recommended best practices when using the CBPR approach. There was already a CAB in existence at Kumbotso at the time of starting my research. I used a CBPR approach to conduct community entry, select communities to participate in the study, recruit female facilitators and establish women's groups.

5.2.1. Negotiating access with political and traditional institutions to the communities to conduct the research

As explained in Chapter 4, the local traditional ruling (emirate) system is still very influential in Northern Nigeria. I therefore applied for permission to conduct the research project to the District Head (Hakimi) of Kumbotso through the Dagacin Kumbotso aka Sarkin Fulani

(Ward Head of Kumbotso) and Dagacin Panshekara (Ward Head of Kumbotso) as well as through the Local Government Chairman, Kumbotso LGA in conjunction with the pre-existing CAB.

5.3. The Community Advisory Board (CAB), Kumbotso, Kano State and its roles in research project

The Community Advisory Board, Comprehensive Health Centre, Kumbotso, Kano is a health facility and community membership oriented social structure which serves as a bridge or interface between the health facility and the communities within the catchment area that it serves. Its secretariat is at the Comprehensive Health Centre, Kumbotso and was initially established with the support of the Institute For Human Virology-Nigeria (IHVN). IHVN is an affiliate of the University of Maryland, Baltimore, United States. The table showing the composition and designations of Community advisory board members at the time of the research project is provided in Appendix IX.

5.3.1. Selection, recruitment, training of female facilitators and establishment of women's groups

The selection, recruitment, training of research team members as well as establishment of women's groups in the communities where the research was done, was coordinated by me in collaboration with the Kumbotso CAB.

5.3.2. Selection and composition of the female facilitators nominated by the CAB

I asked for three women to be nominated by the Kumbotso CAB based on predesigned set of criteria (listed in the next paragraph) and all three were subsequently selected to be the female facilitators for the women's groups by me. I did this because I wanted to ensure that I had sufficient female facilitators to cover the two study communities and one 'control' community planned for the research project.

The nominees from the CAB were all females, had some knowledge of the research locations, were interested in maternal health issues, were willing to learn facilitation skills/qualitative research methods, were resident within the LGA, were from the teaching profession with at least secondary (GCSE) level qualifications and some experience or passion for community work. I also recruited one Hausa translator (female) who was engaged on a pro rata basis on the research project. She has postgraduate qualifications in Hausa language and is a teacher of Hausa language at a local tertiary institution within Kumbotso LGA (called Saadatu Rimi College of Education, Kumbotso). Following their selection, I subsequently trained the three female facilitators as well as the translator on facilitation skills, participatory approaches and qualitative research techniques in a series of workshops that took place at the training hall of the Comprehensive Health Centre, Kumbotso.

I later hired the three female facilitators after the training on a part time basis and paid them a basic monthly stipend to cover communication and transportation costs during the fieldwork. I also hired the translator and she attended the series of training; she was however paid on a pro rata basis, she was only paid for translating transcripts on a case by case basis.

I used the part time/pro rata basis approach to recruitment of facilitators deliberately so as to keep the costs of running the project low and affordable; this is an important feasibility issue for all long term participatory research projects similar to this. I also restricted the number of communities/research assistants for the research to three, partly because of the limited finances available. As part of minimising costs, I also was able through the support of the CAB to recruit female facilitators who lived within the LGA, who had another job, were willing to work on the project on a part time basis and were willing to accept a basic stipend.

I was the research team leader and the only male in the research team, however the CAB had several members that were male. I was responsible for conceptualising and reviewing the

literature for the research, I also led, participated and coordinated the research project field work from the beginning to the end. I was also responsible for training the female facilitators over a period of several weeks at inception phase and continuously throughout the fieldwork, for example through the “on the job” training and review meetings that took place throughout the research project. I also led the research project/fieldwork activities such as interviewing respondents as well as data collection; I also undertook data analysis and wrote up the thesis.

5.3.3. Training of facilitators who were also members of the research team

The three female facilitators also doubled as members of the research team and therefore they, and the translator, had series of workshop style training sessions at the start of the inception phase on facilitation skills, group building skills, communication skills, qualitative data collection methods maternal health, neonatal and maternal danger signs, over a three week period. The workshop involved hands on training, was interactive, participatory and utilised adult learning techniques. The training and development of their facilitation skills was further strengthened through monthly review meetings, continuous supervision and mentoring by me throughout the period of the research project.

The choice of female facilitators was based on the knowledge of the prevailing local customs and patriarchal society in Northern Nigeria that prohibits any direct contact between males and females unless they are either related by blood, kinship or marriage. In addition, the choice of female facilitators is the recommended best practice when using participatory women's groups as documented by several studies that used this intervention as discussed in the preceding literature and scoping review chapters. However, I worked closely with the female facilitators throughout the research fieldwork process.

The three facilitators were responsible for facilitating the participatory women's groups during the inception phase and continued to support them throughout the duration of the

research project fieldwork. They also supervised the women's groups during the implementation phase as they conducted their peer-led activities. The details of the training agenda for the female facilitators and list of the female facilitators are shown in Appendix X.

5.3.4. Selection of the communities for the research project

I guided the CAB in nominating the three communities where the research project would be sited in Kumbotso LGA based on the criteria I provided to the CAB after briefing them about the research project. The criteria for the selection of the three communities were; they should be purposively selected based on their high burden of maternal and newborn health problems and needs as perceived by the CAB. Other criteria include whether they have community leaders that were cooperative, whether they are relatively accessible all year round, and have no current or potential security challenges.

I finally settled on a shortlist of two 'study communities'; that is one rural community called Tudun Kaba, and a peri-urban community called Kayi as well as one rural community called Tsamawa which served as a "control" or "comparison" community where no participatory women's group was established by our team during the duration of the fieldwork of the research project. The selection (by the CAB) of the two rural communities and one peri-urban community within Kumbotso LGA with poor maternal and neonatal health conditions as perceived by the CAB members was done before the decision to select in which of the rural communities will the women's groups be established. The criterion for establishing a women's group in either of the selected rural communities was based on which of the rural communities had a locally existing history of community 'volunteerism' or local organising of group activities. In this regard, Tudun Kaba had a history of local organising such as Islamiyya schools for women in their community as reported by the CAB members and this influenced the choice of Tudun Kaba for the establishment of the women's group for the rural community, and Tsamawa by default became the 'control' or comparison rural community.

On the other hand, there was only one peri-urban community (Kayi) that was selected by the CAB because I did not have enough resources to fund the establishment of two peri-urban sites. Therefore, the second women's group was established in the only peri-urban study site included in the study.

The deliberate selection of communities based on designations into peri-urban and rural categories is important because some studies indicate that relatively better health outcomes for participatory women's groups are observed more in rural than urban settings (Rosato et al. 2008; Prost et al. 2013). Meanwhile, detailed description of all three selected communities have previously been provided in Chapter 4.

5.3.5. Selection of women's group members and establishment of women's groups

The women of child bearing age who had earlier indicated interest in joining the women's group in their community were asked to attend a brief meeting the next day at the same venue. During this first session of women's group meeting with the trained female facilitators, the purpose of the project was fully explained to them, their consent was obtained to enlist them as well as the permission of the community elders/leaders before enrolling them as members of the participatory women's group for that community (Tudun Kaba and Kayi communities respectively).

During this first session of the women's group meeting, the commitment of the enrolled women was obtained to attend women's group meetings whenever they are scheduled (for example) on a weekly or fortnightly basis at a mutually agreeable time, usually 2-4 pm in the afternoon and venue (and usually at the house of the village head) located within the community. Thereafter, several sessions of the women's group meetings were held in the community and a series of auto-diagnosis sessions were conducted during these women's group meetings over a period of between 3 and 6 months.

Eventually, two participatory women's groups with each attached to a female facilitator were established in the communities of Tudun Kaba and Kayi while none was established in Tsamawa (the comparison rural community). However in Tsamawa, a much smaller group of women consisting of the local elderly TBA, the TBA apprentice as well as the wife of the village head were constituted to serve as the focal contact group in Tsamawa community for all activities related to the research project. The participatory women's groups in Tudun Kaba and Kayi communities were planned to comprise of between 14 - 15 members initially, eventually the membership of the participatory women's group in Kayi was 14 and 17 in Tudun Kaba respectively at enrolment.

The membership of the women's group was deliberately restricted to a maximum of 17 members per group because of logistic and financial constraints; and so that optimal group dynamics was easier to maintain Howard-Grabman (1993). If there are too many members, the group may be unwieldy, rowdy and difficult to facilitate and may make it difficult for the group to achieve consensus over decisions (for example when to meet and/or how regularly).

There was oversubscription/over-enrolment for the women's group membership in the rural community of Tudun Kaba, where the planned women's group got over-subscribed four fold; I had to stop registering/enrolling women for the women's group on a first come first served basis after registering the first seventeen women which was the maximum the female facilitators could manage at any single meeting.

I subsequently discussed the oversubscription issue with the female facilitators and women's group members in Tudun Kaba because it was important to cater for the interested women who wanted to join the women's group so as to encourage participation at the community wide level and to avoid the backlash that rejecting volunteers for the women's group may cause in the community.

The co-agreed solution suggested was the creation of a new income generation activity (IGA) training on an intermittent basis for all the three selected communities that would include any woman that was interested in the communities, even if they were not members of any women's group. Tables 5.1 and 5.2 below show the socio-demographic characteristic of women's group members in Kayi and Tudun Kaba communities.

Table 5.1: Socio-demographic profile of women's group members - Tudun Kaba community

Serial/Number	Age (years)	Marital Status	Parity	Educational Status	Ethnic Group	Religion	Occupation
1	25	Married	6	Islamiyya	Hausa	Islam	Sells provisions (petty trading)
2	15	Married	0	Islamiyya	Hausa	Islam	None
3	25	Married	0	Islamiyya	Hausa	Islam	Vegetable seller
4	18	Married	3	Islamiyya	Hausa	Islam	None
5	22	Married	4	Islamiyya	Hausa	Islam	Children's cloth seller
6	23	Married	3	Islamiyya	Hausa	Islam	Food seller
7	20	Married	2	Islamiyya	Hausa	Islam	Pastry seller
8	16	Married	1	Islamiyya	Hausa	Islam	None
9	18	Married	2	Islamiyya	Hausa	Islam	Groundnut seller
10	30	Married	8	Islamiyya	Hausa	Islam	Food seller
11	20	Married	2	Islamiyya	Hausa	Islam	Tailor
12	18	Married	1	Islamiyya	Hausa	Islam	None
13	20	Married	3	Islamiyya	Hausa	Islam	Pastry seller

Mean age = 20.8years, Mean parity = 3 (parity is the number of children a woman has ever given birth to)

Table 5.2: Socio-demographic profile of women's group members - Kayi community

S/N	Age (years)	Marital Status	Parity	Educational Status	Ethnic Group	Religion	Occupation
1	25	Married	4	Islamiyya	Hausa	Islam	None
2	20	Married	2	Islamiyya	Hausa	Islam	None
3	25	Married	5	Islamiyya	Hausa	Islam	Tailor
4	25	Married	8	Islamiyya	Hausa	Islam	Knitting
5	23	Married	4	Islamiyya	Hausa	Islam	Water seller
6	24	Married	7	Islamiyya	Hausa	Islam	Househelp/Domestic servant
7	20	Married	1	Islamiyya	Hausa	Islam	Pastry seller
8	25	Married	6	Islamiyya	Hausa	Islam	Pastry seller
9	35	Married	1	National Certificate of Education (NCE)	Hausa	Islam	Teacher
10	17	Married	0	Secondary School Certificate	Hausa	Islam	Islamiyya Teacher
11	25	Married	7	Islamiyya	Hausa	Islam	Pastry seller

Mean age = 24years, Mean parity = 4, (parity is the number of children a woman has ever given birth to)

5.4. Initial data collection and analysis

5.4.1. Preparations for data collection

The female facilitators were readily accepted by the communities because we were introduced to them by their traditional leaders who in turn had accepted us readily because we were working together with some of their local leaders within the Kumbotso CAB

The research team, in conjunction with the village heads and local TBAs convened a meeting with women of child bearing age at the houses of the TBA in Tudun Kaba and village head in Kayi and Tsamawa communities respectively. During the meeting, fourteen women of childbearing age who indicated interest in joining the women's group were pencilled down by the research team members and were invited to participate in the FGD later on the same day, while another group of fourteen women who indicated their lack of interest in joining the women's group were also selected and invited to participate in another FGD on the same day.

This same process was repeated in the three selected communities (the two study communities and one control community). This gave rise to a total of five FGDs that were conducted during the inception/design phase of the research project.

A list of key local maternal health gatekeepers with perceived influence on maternal and newborn health in the three selected communities were compiled during an earlier meeting with the CAB, Kumbotso. The list consisted of the village head (mai-unguwa), religious leader (Imams), local traditional barbers (Wanzami), local TBAs in the communities. The listed individuals were approached in the three communities and the KIIs were conducted by me. This gave a total of nine interviews that were conducted during the inception phase of the project. The summary table of the FGDs and interviews conducted during the inception phase

of the research project has been provided previously under the preceding chapter (see Table 4.1 in Chapter 4).

5.4.2. Analysis of FGDs and KIIs

The audio recordings of the KIIs and FGDs were in the locally spoken language Hausa; the audio recordings were also transcribed in Hausa for the purpose of keeping as close as possible to the meanings in the recordings so that they don't get "lost" in translation.

The transcripts of the KIIs/FGDs were initially read by me several times and discussed with the three female facilitators of the women's groups during the initial stages of data analysis. Thereafter, I designed a preliminary thematic matrix (table) and coding scheme for these transcripts in Microsoft Word software based on an inductive approach. The preliminary themes were derived after repeated readings (immersion) of the transcripts, and they were grounded in the data. However they underwent refinements with further readings and input from the research and supervisory team members.

I then coded the data from the FGDs and KIIs, before proceeding to organise and chart (by manually cutting and pasting) "chunks" of coded data from the transcripts of the FGDs and KIIs into the already designed thematic matrix. It was at this point, that the Hausa scripts were translated into English; side by side within the thematic matrices and finally interpreted along each of the emergent themes. These emergent themes went through several revisions in consultation with my research team and PhD supervisory team members. The thematic matrices for the first FGDs and KIIs are provided (see Appendix IV) while the overall findings from the analysis of the FGDs and KIIs are provided below.

5.5. Findings from the inception phase - emerging themes

The following were the themes that emerged from the first set of FGDs and KIIs that took place during the inception phase which were analysed and reviewed in collaboration with the facilitators that had been working closely with the women's groups.

a) Awareness of common illnesses in mothers and newborns:

The findings revealed that there are a variety of illnesses that commonly affect mothers or newborns during the period of pregnancy, childbirth and breastfeeding respectively. The main complaints include vaginal bleeding, vaginal itching, vaginal soreness, boils, abdominal/pelvic pain, vomiting, malaise, lack of appetite, fever, headache, fits and vaginal discharge in mothers, whilst in newborns it was mostly fever, convulsions and fainting spells. For example, during the KII with the local barber in Kayi community he said "*some women also have leg swelling, fits and severe bleeding during or after delivery*" and "*piles' also afflict pregnant women and can cause constipation*". In addition, during the FGDs with women's group members, a young mother in Tudun Kaba said "*I suffer from lack of appetite in some pregnancies*", while a women's group member from Kayi said "*I suffer body weakness, abdominal pain, headache and fever*" during early pregnancy. Another young woman from Tsamawa stated that "*I usually have tenderness of the breast when I am pregnant*".

There were also reports of deaths of mothers during pregnancy or childbirth, deaths of sick newborns and stillbirths in some of the communities by some women during the FGDs in all the three communities. These accounts were noted across all the interviews and FGDs conducted in both the study and comparison communities, with only some variation in the predominant type of symptom or outcome in the different communities. For example when asked about the causes of maternal deaths in the community, a women's group member from

Kayi said *"some of the women here had prolonged labour, fits, retained placenta and bleeding which can cause death during pregnancy"* while another women's group member reported that *"only one woman died during labour this year and it was her first pregnancy"*. Some of the women's group members had personal "near miss" experiences, as narrated by a young mother during the FGD at Tudun Kaba *"No woman has lost her life recently here but one of us at this meeting almost lost her life during labour."* See Tables 1a and 2a of the thematic matrix in Appendix IV for more details.

b) Preference for traditional medicines:

Due to a strong attachment to local cultural values, there is a persisting and overwhelming preference amongst majority of the respondents in all the communities for "local" (traditional) medicine; there were also strong beliefs regarding the effectiveness of traditional medicine (which may widely include herbs, plants, animal and other extracts, prayers, 'holy water', and incantations) for treating illnesses in mothers and newborns during pregnancy, labour and breastfeeding periods. For example, during the KII with Imam and Village Head at Tudun Kaba *"the Imam also gives 'holy' water and offers prayers to treat prolonged labour"*, with "success" in most cases. This preference and belief in traditional medicine did not totally exclude "mixing the use" of the latter with modern orthodox health services or medication for maternal or newborn illnesses. For example the Village Head at Kaba said *"we take the pregnant woman to the hospital only if the traditional medicine (given by the local barber/imam) does not make her better"*. However, this utilization of orthodox health care in most instances tended to be at a much later stage of the maternal/ neonatal illness when the condition has worsened or has become complicated. This delay in seeking medical care for obstetric emergencies greatly increases the risks of death for the mother and newborn. In some instances there was concomitant utilisation of both orthodox and traditional medicine by sick mothers in these communities at the same time because the

underlying local belief about medications is that "all medicines are trials in the search of a successful or lucky" cure. In addition, there were some instances whereby clients had alternated with the use of traditional medications, then orthodox medications and then back again to the use of traditional medications for treating maternal and newborn illnesses. The reasons for this behaviour include perceived better efficacy of traditional medications particularly for ailments that are thought to have spiritual/supernatural basis, as well as the the relatively lower costs and ease of access of traditional medications. See Table 1b and 2b of the thematic matrix in Appendix IV for more details.

c) Pregnancy and motherhood as normal/not risky:

Another emergent theme was the pervasive underlying perception by community members in all the communities that pregnancy, childbirth and breastfeeding are 'normal' or minimal risk states, For example, a women's group member at the FGD in Kayi community said with 'pride' *"there was no one with me when I gave birth"*. This is further buttressed by the fact that pregnant women are not exempted from their *'normal daily tasks unless they fall sick'*. The implication of this is that most husbands do not prepare for the possibility of anything going very wrong at any stage of the pregnancy or puerperium of their wives; therefore any adverse event that occurs during the pregnancy (to the mother or newborn) is usually blamed on poor luck or destiny. This state of "poor risk perception" regarding pregnancy and the purperium is also shared by the pregnant women whose utterances suggests that their main achievement or "pride" will be to *"give birth at home alone and unassisted"*, regarding this as the highest level of motherhood craft and the desire not to be a financial burden on her husband through maternal ill health.

This "poor risk perception" is further influenced by economic considerations, because the family or husband may not want to incur additional financial burden in view of the other

associated expenses for valued social events which include the naming ceremony of the newly arrived baby. See Table 2c of the thematic matrix in Appendix IV for more details.

d) Changing roles and responsibilities of mothers' parents:

Another theme that emerged is that increasing modernization and generally poor economic situation may be beginning to influence the communal cultural norms that dictates who has the responsibility for guiding and taking care of a pregnant woman in the respective communities. In the past, this role was taken by the husband and usually shared with his older female relatives such as his mother, wife of his elder brother or an elderly female neighbour in the communities, but this is beginning to change. For example, a young mother at the FGD in Kayi community asserted "*there was negligence on the part of my parents because they did not take me to the hospital on time*". Currently, the parents of pregnant women are increasingly forced to play direct and active roles in taking care of their pregnant daughter's medication or treatment, urging her to attend ANC, and paying for her hospital bills, especially when the husband or his relatives are unwilling or unable to sponsor such activities. However, the parents of any pregnant woman in those communities will generally still need the permission of her husband before addressing any of her major health needs. See Table 2e of the thematic matrix in Appendix IV for more details.

e) Changes to local diets:

A strong theme that also emerged was the prevailing perception especially amongst the older members of the communities that were interviewed (KIIs); that changes in diets, such as change from local diets based on whole unrefined/unprocessed grains to consumption of refined or processed foods that are also high in salt content, were making pregnant women and community members more vulnerable to illnesses during pregnancy, childbirth and breastfeeding. During the KII, a traditional barber (local barber in Kayi community) was

generally against consumption of certain foods by pregnant women because he believed that such foods that were "*either too sweet or bitter can cause constipation/haemorrhoids (Basir) and cause miscarriage respectively*". See Table 1c of the thematic matrix in Appendix IV for more details.

f) Importance of beliefs:

Most of the respondents during the FGDs and KIIs had diverse beliefs regarding the causes of ill health in mothers and newborns ranging from natural, divine, spiritual or nutritional factors as causative agents. For example, a young woman at the FGD in Tudun Kaba said "*It is Allah ... Who helped me to give birth safely*". The causes of ill health in these communities were mostly attributed by community members to divine or spiritual influences, and these may explain the general preference locally for using traditional medicines (such as herbs, plants, animal and other extracts, prayers, 'holy water', incantations) when treating illnesses in mothers and newborns. The importance attached to beliefs regarding divine and spiritual causes of maternal and newborn ill-health was documented at all the sites where this research project was conducted. See Table 2d of the thematic matrix in Appendix IV for more details.

g) Lack of existing community assets:

An important theme that emerged was that none of the communities had an active women group that was working for maternal and newborn health in any of the communities but all of the women during the FGDs indicated that it will be a good and highly desirable to have a group catering for the interest of mothers and newborns in their communities. For example, a woman at the FGD in Kayi community said "*there is no women group that is concerned with health of mothers*" in our community. See Table 2f of the thematic matrix in Appendix IV for more details.

However, there was an existing locally coordinated emergency transport system (ETS) in one of the communities (at the peri-urban site called Kayi), which occasionally assists in transporting women in labor to the local health facility. In addition, the younger brother of the village head in that same community has received and conducted “step down” training regarding maternal danger signs at least once for female members in his community.

In summary the FGDs and KIIs revealed, overarching or cross-cutting themes which centred generally around beliefs or issues that appeared to be stable/unchanging; one of these is related to local or indigenous knowledge associated with maternal and newborn health which have roots in the local culture and religion. Whilst the second cross-cutting theme is generally about some cultural aspects that are changing, such as those related to responsibilities for the wellbeing of pregnant women; effect of changes in dietary habits/lifestyles on the health of young mothers in relation to previous local food habits or norms.

5.6. The auto-diagnosis sessions during the inception phase

The auto-diagnosis sessions conducted during the research project is an adaptation of the original application of these methods (Howard-Grabman, 1993). The auto-diagnosis can be both an end and a means because the process empowers and transforms groups of women into a "participatory women's group" as well as generate a list of the perceived local maternal health needs or problems of their communities.

The facilitator-led participatory women's groups implemented the auto-diagnosis steps over a period of eight to twelve weeks to obtain the local maternal health needs and priorities as perceived by the women's group members. The facilitator-led participatory women's group intervention used the auto-diagnosis sessions adopted in the WARMI project, Bolivia (Howard-Grabman, 1993). In this approach, women met monthly, in groups facilitated by three locally selected and trained women to identify maternal and newborn health problems,

and suggest strategies for addressing them. The detailed descriptions of the auto-diagnosis process conducted during the inception phase. The snapshot of transcripts for the auto-diagnosis sessions are shown in Appendix IV.

5.7. Analysis of auto-diagnosis sessions obtained from the facilitator-led women's group meetings

The audio recordings of the auto-diagnosis sessions were in the locally spoken language, Hausa; for the purpose of keeping as close as possible to the meanings in the recordings, the audio recordings were also transcribed in Hausa. Thereafter, the transcripts of the auto-diagnosis sessions were initially read several times by me, and then discussed with the three female facilitators of the women's groups during the initial stages of data analysis. Thereafter, according to the auto-diagnosis approach, there are pre-designated outputs (of each auto-diagnosis session; and the output from the session of interest for my research project was auto-diagnosis session 4, step 8 which was titled "*prioritize the (maternal and newborn health) problems*". I then extracted information regarding the prioritised maternal and newborn health problems from the transcripts of the auto-diagnosis session 4, step 8. These prioritised lists of maternal and newborn health problems as perceived by the women's group members were further compared with the field notes (research diary) that was kept by the facilitators who led the auto-diagnosis sessions. It was at this point, that the list of prioritised problems were translated into English from Hausa. The list of prioritised health problems derived from the auto-diagnosis session 4, step 8 conducted in Tudun Kaba and Kayi communities respectively are provided in tables 5.3 and 5.4 below. See Appendix VI for the template of the auto-diagnosis sessions.

5.8. Findings from the auto-diagnosis sessions conducted during women's group meetings

The auto-diagnosis sessions generally provided me with additional insights regarding the health needs and problems of mothers and newborns in the two study communities. The sessions also helped to engage and empower the members of the newly formed women's group in reflecting on the local maternal and newborn health needs which encouraged critical thinking amongst them regarding local maternal health problem and also promoted group building processes.

Table 5.3: List of perceived maternal and neonatal health conditions - women's group, Tudun Kaba

S/N	Name of perceived maternal and neonatal health condition (in English and Hausa)
1	Retained placenta (jinkirin mahaifa)
2	Prolonged labour (doguwar nakuda)
3	Painful contractions after childbirth (ciwon ciki bayan haihuwa)
4	Early morning sickness (Laulayin ciki)
5	Vaginal bleeding (zubar da jini)
6	Eclampsia/hypertension in pregnancy (hawan jini)
7	Convulsions/fits (jijjiga)
8	Pruritus vulvae/itching genitals (kaikayin mara)
9	Malnutrition or wasting (mayan koniya)
10	Sepsis/febrile illness in newborn (zazzabin yara jirajirai)
11	Death of the newborn/stillbirths (mutuwar jariri)

Table 5.4: List of perceived maternal and neonatal health conditions - women's group, Kayi

S/N	Name of perceived maternal health problem (in English and Hausa)
1	Eclampsia/hypertension in pregnancy (hawan jini)
2	Anaemia in pregnancy (karacin jini)
3	Prolonged labour (doguwar nakuda)
4	Retained placenta (jinkirin mahaifa)
5	Abdominal pain/painful contractions (ciwon ciki/ciwon mara)

The findings from the auto-diagnosis sessions generally indicated that the women's group members from the rural community (Tudun Kaba) perceived both maternal and neonatal health problems to be priorities and this was further supported by the findings from the KIIs and FGDs conducted in the community as reported earlier in this chapter.

On the other hand, the women's group members from the peri-rural community (Kayi) perceived maternal health problems only as priorities even though findings from the KIIs and FGDs conducted in their community (as reported earlier in this chapter) included neonatal health problems as a priority in Kayi community.

5.9. The central combined participatory planning workshop

The findings from the first set of FGDs, KIIs and auto-diagnosis sessions were used during the series of participatory planning meetings that were held both centrally (at Kumbotso Town), as well as in the two study communities of Kayi (peri-urban) and Tudun Kaba (rural) with women's group members and female facilitators on different occasions.

During the first central combined participatory planning meeting which held at Kumbotso Town, I adapted the nominal group technique (NGT) to obtain the list of prioritised health problems as perceived by the group members. In the adaptation of the NGT, I first presented a welcome statement during the plenary session of the combined meeting where I explained that the purpose of the meeting was to prioritise and select the three most important maternal and newborn health problems from among the long list of perceived problems generated during the earlier auto-diagnosis sessions by the women' groups. I further explained that the output from this process will be used in designing a health literacy intervention for implementation during the research project.

Thereafter I gave the female facilitators attached to each of the women's group, the long list of maternal and newborn health problems that were previously generated by the women's

groups during the auto-diagnosis sessions held in their respective communities Kayi and Tudun Kaba. Each of the female facilitator served as the group leader for the women's group that she was assigned to, and each facilitator was provided with flip charts, masking tape, markers, pens and paper for the group-work activities and presentation.

The two women's groups were then asked to sit according to their community of residence either Kayi or Tudun Kaba in separate parts of the hall. The women were arranged in a round-table manner together with their assigned female facilitator in their groups. Thereafter, the female facilitator encouraged each woman in the group to independently select from the shared list of health problems, the three most important maternal and newborn problems in her community, and to briefly explain her reasons for her choice to the group. The choices and responses from all the group members were then documented by the female facilitator, one after another.

Building on the three most mentioned health problems which had been discussed in the groups, the following health problems (prolonged labour, vaginal bleeding and death of newborn/stillbirth in Tudun Kaba) and (prolonged labour, anaemia in pregnancy and hypertension in pregnancy in Kayi) respectively were documented. The newly compiled list of prioritised health problems mentioned previously, together with the reasons for their selection were presented by each group leader and subsequently discussed during the plenary session that I facilitated. The most common reasons given by group members for prioritising these health problems were based on severity or likelihood of resulting in death.

Following the presentations, I then discussed at the plenary session, the evidence suggesting that improving knowledge and skills for detecting maternal and neonatal danger signs can address the priority health problems which they had identified. At the end of the meeting, it was decided following discussions, that a participatory approach for improving the

knowledge and skills for detecting maternal and neonatal danger signs by women's groups will be co-developed in the next series of meetings.

Group discussions and participatory technique using the nominal group technique (NGT) Pope and Mays, (1995, p.43) described in the previous section were used at the series of meetings subsequently to discuss, refine and achieve consensus regarding the content and timing of all the peer-led participatory learning sessions that were subsequently conducted in the various communities by the respective participatory women's group members themselves during the implementation phase.

Following the combined central participatory workshop and subsequent series of meetings, which was held together with the two participatory women's groups of the two study communities to co-present, co-prioritise the compiled health needs of mothers and newborns as well as suggest strategies and roles of the participatory women's groups in addressing the identified health problems. It was co-agreed with the women's groups and I that the following were to inform the development of the intervention for the implementation phase:

- a) The transition of the participatory women's group from a facilitator-led to peer-led participatory women's groups
- b) Co-development and implementation of a participatory maternal health literacy intervention addressing the prioritised health problems of pregnant mothers and newborns (comprising of maternal and newborn danger signs, and healthy diet) which was delivered using participatory visual methods at peer-led participatory learning sessions by the peer-led participatory women's group on a fixed and outreach basis in their respective communities.
- c) Co-organization, co-planning and co-implementation of income generating activities training with the women's groups.

d) Co-organization, co-planning and co-implementation of basic group strengthening activities such as selection of group representatives, scheduling of participatory women's group meetings, basic record keeping, registration of the participatory women's group with the local government authorities, resource mobilization, stipends for buying second hand GSM/Android phones and sending basic meeting reports through Whatsapp, development/updating the women's group register of local health events of pregnant mothers and newborns in their communities as well as providing light refreshments at participatory women's group meetings.

e) Co-planning and co-implementation of data collation system for the participatory monitoring and evaluation method (MSC method).

5.10. Overall findings and lessons learnt from the inception phase

Overall, the inception phase produced useful insights, both general and context specific, that guided the implementation phase of the project. These are listed below:

a) Value of the CAB

1. Working with a CAB that is trusted and has good representation from the local catchment communities helps in expediting the "relationship building" process which is fundamental for the participatory research process to succeed.

2. It also facilitates and expedites obtaining official permission from political and traditional authority figures in the study area and speeds up the process of community entry, participation, ownership and obtaining community trust.

3. Part of the strengths of a good CAB is that it can help in offsetting some of the limitations of using the CBPR method by reducing the time needed to build relationships between academia and local communities as well as obtaining their trust.

4. The CAB also helped the research team to quickly identify suitable locations for the fieldwork as well as local staff that were qualified and willing to do the work thus indirectly helping to reduce research project costs and start up. This is important because attrition of research project staff, including women's group facilitators, has been a major problem reported in other studies that utilised the participatory women's group approach.

5. Working with an existing CAB is a recommended CBPR best practice because it can also serve other roles such as; it serves as a clearing house for emerging or challenging issues/tension during the research, protects community interest, gives the community a 'voice' and helps in prioritising community needs.

6. I had a very high retention rate for project staff (100%); none of the female facilitators resigned during the fieldwork stage, and I partly attribute this to the fact that we used part time staff (school teachers) who are indigenous to that area and who were nominated by the local CAB.

b) Funding issues

The problem of funding to run the research project was also important, and this was largely minimised by recruiting women who were employed elsewhere as full time teachers within the locality, but part time on the project. This helped in bringing down significantly the running costs of the research project.

c) Need for flexibility

The research project was deliberately designed to be flexible to fit in with the schedule of the women's group members. This is because the nature of daily rural life for women is busy and we wanted to avoid any tensions that might arise for the women from participating in the women's group activities as well as taking care of their daily chores. This flexible approach

by the project also fitted in well with the part time nature of the research team members's jobs. This helped in ensuring that there were generally no major clash of activities during the research project phases; and this might also contribute to the longer term maintenance of the women's group.

d) Value of using female facilitators

The recruitment of female facilitators to work with the women's group also encouraged trust and participation between the project team and the communities where the research project was conducted because it was culturally appropriate; with bonding and sharing of information taking place quickly between the facilitators and the women's group members.

e) Understanding training needs of facilitators and peer trainers

Conducting a formal training for the female facilitators was necessary so as to acquaint them with skills necessary for their major task of facilitating the women's group in the earlier phases of the research project. The training was strengthened by the supportive supervision and concurrent on-the-job training which I provided throughout the lifespan of the research project. It was standard operating procedure during the research project for me to provide relevant training just before the commencement of any new task requiring a different skill sets or for research project related activities that were ongoing.

f) Value of planning meetings

The participatory planning meetings were an innovation which I introduced, which were intended to provide an opportunity for women's groups to participate in planning the practical logistics involved in conducting peer-led participatory group meetings and activities on a long term and sustainable basis. Incorporating a component for promoting capacity for

planning by strengthening local organizational skills is also an example of CBPR best practice.

g) Understanding community (felt) needs as perceived by members women's groups

1. The field notes/research diaries compiled by the three facilitators during the (auto-diagnosis sessions) inception phase contained several (repeated) requests from across the three selected communities for the project to address the high levels of pervasive poverty which majority said "*is a common factor affecting maternal and neonatal health in their communities*". Several suggestions were made by the women's groups during meetings to include income generating activities (IGA) trainings at intermittent intervals, and the popularity of IGA trainings which were usually co-anchored by the women's groups may partly explain the willingness of community members always wanting to join the women's group during the research project. The IGA trainings have the potential to partly address the poverty in these areas and this might have a positive effect (in the long term) on the health and health literacy of women in these areas e.g. through social change, basic financial empowerment and increased resource mobilization skills. The research project conducted IGA trainings across all the three selected communities. The IGA trainings were very popular and helped in mobilising additional respect and acceptance for the women's groups in their communities, partly because it responded to a local need. The IGA trainings also served as the main "control" activity that was provided to the comparison community of Tsamawa.

2. Arising from the themes obtained from the FGDs and KIIs as well as the consensus at the participatory planning meetings with women's groups; promotion of healthy diets and knowledge of danger signs in mothers and newborns were selected as the key issues to be addressed during the implementation phase of the research project.

3. Following the auto-diagnosis sessions as well as the participatory planning meetings, the facilitators also identified gaps which included lack of basic organising skills, record keeping by the women's group members; these needed to be addressed to enable them implement the health promotion interventions during the implementation phase of the project.

h) Understanding community capacities and capabilities

1. The lessons from the inception phase suggest that it is feasible to design and implement CBPR even in resource constrained settings, however, there are limitations to the extent to which all the CBPR elements can be rigorously implemented in LMICs because of contextual or inherently intrinsic limitations such as poor organizational skills amongst community members, poor institutional capacity and knowledge regarding CBPR as well as poor educational attainment rates which may hinder co-analysis of data and reporting of events.

2. The lessons learnt from the auto-diagnosis sessions suggest that participatory visual methods are very useful and quick methods that can be adapted to promote participation in learning activities in communities with low literacy (reading and writing) skills.

5.11. Summary

The relationship building, trust, participation and co-learning that was facilitated by using the participatory research approaches to select the study communities, female facilitators, establish women's groups and conduct a participatory maternal health needs assessment (auto-diagnosis) during the inception phase of the research project fieldwork was very important in influencing the development of the health literacy intervention. In addition, findings from the FGDs, KIIs and field notes also informed the design of the activities for the implementation phase and were triangulated with the findings from each.

Chapter Six: The Implementation Phase of the Research Project

6.1. Preamble

The implementation phase utilised the findings and lessons learnt from the preceding design and inception phase of the research project; these informed the development and implementation of a set of health literacy activities that empowered women's group members to address the health complaints of mothers and their newborns in a participatory manner in their communities.

6.2. Description of the complex intervention used in the research project

The research project intervention is a composite and complex health intervention consisting of peer-led participatory women's group meetings, peer-led participatory learning sessions and participatory visual methods that used drawings/pictures of maternal and neonatal danger signs and promotion of healthy nutrition for mothers and newborns.

The main maternal health literacy activities that the female facilitators co-identified with the women's group for the implementation phase; were transition from a facilitator-led to a peer-led women's group in both communities, organizing and conducting peer-led participatory learning sessions to improve knowledge of danger signs in mothers and newborns, as well as promotion of positive nutritional practices among mothers and newborns. Implementation activities were conducted through participatory learning sessions where women's group members used the medium of personally lived stories or experiences and drawings/graphics of danger signs in mothers and newborns as well as depictions of positive nutritional states of mothers and their newborns to create awareness and discussions

The prioritisation of knowledge of maternal and neonatal danger signs and promotion of healthy nutrition in mothers and newborns for inclusion in the health literacy intervention was based on the findings from the auto-diagnosis sessions, KIIs and FGDs conducted during

the inception phase of the research project and also discussed during the participatory planning meetings discussed earlier.

As part of strengthening the implementation process, we also identified the need to build the capacity of women's group members on other skills such as basic record keeping after group meetings, basic group organizational management and basic group logistic planning to enable them conduct local health promotion activities in an organised and participatory manner.

6.2.1. The peer-led participatory women's group meetings

The peer-led participatory women's group meetings, which lasted eight months, adopted a modified participatory learning approach. Women's group members met once or twice monthly at pre-designated venues (usually at the house of one of the women's group members), in each group facilitated by two to three selected and trained members (peer facilitators) of the women's group, to identify local maternal and newborn health or related problems, and suggest feasible strategies at the group level for addressing them.

At the meetings, the women's group members plan their next community outing for conducting the peer-led participatory learning sessions as well as document the minutes of their meeting. The peer facilitators are volunteers who are selected from members of the participatory women's groups; the volunteers from the women's group are trained by the female facilitators on how to manage the peer-led participatory learning sessions.

The peer facilitators from the women's group are paid only a basic communication stipend as support towards organising and conducting peer-led participatory learning sessions and participatory visual methods on maternal and neonatal danger signs in their communities. The training of the peer facilitators is conducted during the meetings of the women's group that takes place every month just before they go out for a community session. This training

covered key messages on maternal and neonatal danger signs as well as promotion of healthy maternal and neonatal nutrition by using participatory visual methods.

6.2.2. Peer-led participatory learning sessions and participatory visual methods

The selected health literacy activities were blended combinations of personal stories /experiences, graphic drawings /pictures of maternal and newborn danger signs as well as drawings of varying nutritional states which were presented to different groups of women at different community settings (using participatory visual methods) during women's group meetings. Samples of the PVM (the drawings and pictures) used by the peer facilitators during community sessions are provided in Appendix XI.

The interventions were primarily aimed at improving the health literacy of the women's group members and eventually that of other women in their respective communities in the long term. The co-identified health literacy activities that were conducted by women's groups in their respective communities are based on the findings from the auto-diagnosis sessions with women's groups as well as the FGDs and KIIs; these findings were prioritised and addressed during the combined central workshop as explained in the preceding chapter.

This blended mix of health promotion interventions (that is a mix of participatory research approaches) is an important difference and departure from the unitary approach utilised by other research that studied participatory women's groups approaches (Prost et al. 2013) to improve maternal and newborn child health (MNCH) in other settings. The commonly used method in these prior studies (Prost et al. 2013) was just to provide generic training to female facilitators and women's groups on key MNCH interventions (which are usually identified and/or decided by the researchers).

Our research project first obtained and mapped the key health problems of mothers and their newborns *as perceived by the women's group members* during the auto-diagnosis sessions

with women's groups. In addition, the venues within the community as well as where and when the women group members decide to conduct women's group activities were jointly discussed and agreed together with the women's group members and the female facilitators during the participatory planning meetings. The examples of venues that were used during the implementation phase of the research fieldwork for conducting the implementation activities include the local female Islamiyya school, house to house visits within the community, the houses of women's group members, local naming and wedding festivities and house of the village head.

The implementation activities started with the first women's group meeting which took place in Kayi community on first week of October, 2016 and their first peer-led participatory learning session took place during the last week of October, 2016; while the women's group at Tudun Kaba community also started in the month of October, 2016.

6.3. Data analysis and descriptive findings of the main implementation activities

6.3.1. Socio-demographic profile of the peer-led women's group in Tudun Kaba community

There were a total of thirteen active women's group members in Tudun Kaba community at the time of the implementation phase, they had a mean age of 21 years and average parity of three children. All were from the Hausa ethnic group, from the Muslim faith and married. None of the members had post-primary school education, all were full time house wives and none were formally employed. (See Tables 5.1 and 5.2 in previous chapter for the socio-demographic profile of the women's group in Tudun Kaba community).

6.3.2. Socio-demographic profile of the peer-led women's group in in Kayi community

There were a total eleven active women's group members in Kayi community at the time of the implementation phase, they had a mean age of about 24 years and average parity of four

children. All were from the Hausa ethnic group, all from the Muslim faith and currently married. Only two of the members had post-primary school education, all are full time housewives and two are formally employed. (see Tables 5.1 and 5.2 for the socio-demographic profile of the women's group in Kayi community).

6.3.3. Findings from meetings of peer-led women's groups

The analysis of the main implementation activities consisted of two parts: a qualitative (thematic) analysis of the transcripts of the peer-led women's group meetings and a simple summary of implementation activities conducted by the peer-led women's group on a monthly basis (such as number of women's group meetings held per month, number of community sessions conducted by women's group per month, number of reports for meetings held per month and average attendance at women's group meetings) during the implementation phase.

The data collection tool used for collecting minutes of peer-led women's group meetings was a simple form designed by me. The form is called the women's group's reporting and meeting attendance template (see Appendix VI); this form was used to record highlights of the proceedings of meeting. The form is filled in by a member of the women's group who can write in Hausa and supported by a designated female facilitator with information provided by the women's group during their monthly meetings.

The paper based report format was later replaced and supplemented after four months of implementation by audio recordings of the women's group meetings on android phones so as to obtain more detailed data and to reduce the costs of collecting the reports; the audio recording of the meeting is made by the peer facilitator which she later transmits via Whatsapp; and these recordings were then transcribed and summarised. The summary of the

transcripts of peer-led women's group meetings for Kayi and Tudun Kaba communities are shown in Appendix IV.

The activities of the peer-led participatory women's group were mainly achieved in practice after using the following; a participatory research approach that relied on visual rather written materials during the peer-led participatory learning session and conducting the peer-led participatory learning sessions using traditional role play scenarios that was natural to the women and their setting (such as traditional storytelling, visual methods including folk/role plays). These participatory research approaches used context specific health promotion materials that were in a visual (graphic) format and addressed the earlier identified felt maternal health needs knowledge of maternal and neonatal danger signs as well as healthy diets for mothers and newborns.

The analysis of the main implementation activities included a simple summary of activities conducted by the peer-led women's group on a monthly basis such as number of women's group meetings held per month, number of community sessions conducted by women's group per month, number of reports for meetings held per month and average attendance at women's group meetings throughout the implementation phase. Appendix V contains the summary statistics of the peer-led participatory women's group activities during the implementation phase.

6.4. Outline of peer-led women's group meetings and peer-led participatory learning sessions

The minutes of peer-led women's group meetings were kept for all study communities; these were maintained by the women's group members with support of a designated female facilitator. There were a total of fourteen meetings, eight community sessions and eight meeting reports in Kayi community during the implementation phase of the research project

and a total of nine meetings, seven outreaches and four meeting reports in Tudun Kaba community during the implementation phase of the research project (see Appendix V).

6.5. Lessons learnt from implementation phase

A number of useful lessons were learnt about the most feasible approaches and the value of specific technologies, particularly use of mobile phone technology

a) Use of phone cameras:

In poor communities with little or no reading and writing skills, information, communication technologies (ICT) especially mobile telephony helped our research project in bridging the "reporting" gap because we were able to train women's group members to use cheap second hand mobile phones which I bought for them to record meetings/take pictures. These audio or visual recordings were subsequently sent via Whatsapp at low cost to female facilitators to transcribe/archive. The initial suggestion for using mobile telephony to assist me in the research project was given to me by a Masters (MSc) student following my seminar presentation at ScHARR, University of Sheffield in 2016.

b) Use of phones to reduce costs

The use of the android phones really made communication easier and reduced the cost to the project related to travelling physically to those communities all the time whenever the need arises.

c) Use of phones to promote maternal/newborn health

In addition, the android phones were also used by the women's group members to organise meetings or pass information about mothers that were sick in their communities.

6.6. Data analysis and descriptive findings of the supportive implementation activities

The findings from the combined participatory planning meetings during the inception phase indicated the need to implement supportive implementation activities that could strengthen the main implementation activities and ensure that these could be conducted in a satisfactory and sustainable manner. Supportive implementation activities included:

- a) Providing peer-led women's groups with a general orientation/training on basic organizational skills for group development and management.
- b) Initiating processes for formally registering the peer-led women's group with the local government authority as a local cooperative group so that the women's groups can leverage additional government resources whenever these become available.
- c) Supporting the peer-led women's group to establish and select their group leaders (and encourage the leadership of the women's group to be held on a rotational manner).
- d) Working together with the peer-led women's group to develop and field-test a women's group register of local maternal and newborn events in their respective communities.
- e) The peer-led women's group, supported by the group facilitator, recorded local maternal and neonatal health events on a monthly basis during the implementation phase of the research project. This basic register helped in strengthening the record keeping and events tracking skills of the women's group; the register of local maternal and newborn events can be used as a local advocacy, monitoring tool and score card (see Appendix VI for copy of register).
- f) Working together with the peer-led women's group to develop and field-tested a basic women's group's reporting and meeting attendance template for recording the transcripts, and major decisions taken during the meetings of the women's group. This report format was

important for record keeping, tracking of action points as well as strengthening group organizational and management skills (see Appendix VI for a copy of the basic women's group's reporting and meeting attendance template).

g) I worked together with the peer-led women's groups to design a timetable of training for women's groups on local income generation activities training which I co-led together with the female facilitators and the women's group members. This activity was important for strengthening the resource mobilization skills of the women's group and for helping to ensure long term sustainability of the group as well as strengthen bonding within the group, promote financial empowerment of women group members, and help maintain the enthusiasm of the group members.

h) I worked together with the peer-led women's group to develop and field-test a women's group story telling template which we used in recording stories of most significant changes by women's group members. These stories were later analysed using the MSC approach during the evaluation phase of the research project. This was conducted in all the sites (see Appendix IV for MSC thematic matrix and Appendix VI for women's group story-telling template).

i) I trained the women's groups members to use these phones for sending meeting reports and to communicate with their female facilitators or women's group members as well as to send reports/pictures of research project related activities using Whatsapp.

j) Another supportive activity was the strategy employed during the implementation phase to encourage and co-organise training on locally affordable income generation activities such as production of local soap, local perfume (Humra), local skin creams (vaseline) during the peer-led participatory learning session by women's group members. This strategy was already in use during the inception phase in all the three communities and was the major "control

activity" in the comparison community (Tsamawa) where no women's group was established and no auto-diagnosis sessions were conducted. However, as part of the lessons learnt, inclusion of "income generating activities training" generated a lot of enthusiasm and bonding amongst women at all the study sites - probably because of the empowering nature of these activities and high levels of poverty in these communities. Therefore, training on locally affordable income generation activities was included as one of the supporting implementation activities for the peer-led participatory women's group members. The training on locally affordable income generation activities may eventually have the potential to boost household and women group members incomes in the long run and this might make additional resources more available for addressing health problems of mothers and their newborns at household and community level.

In total, the implementation phase lasted eight months (1st October 2016 - May 2017) due to the need to complete and write up my PhD fieldwork. However the duration was adequate for commencing the implementation of the planned health literacy activities and in line with the experience of similar projects (Howard-Grabman, 1993).

6.7. Findings from supportive implementation activities

6.7.1. Data analysis and descriptive findings for women's group registers of local maternal and newborn health events

A register was set up for the participatory women's group members at the beginning of the implementation phase of the research project. The register collected information on selected maternal and neonatal health events (such as maternal and neonatal deaths) that occurred in their communities from women's group members during the monthly meetings.

The women's group register of local maternal and newborn health events was relatively easy to collate and fill by the peer-led women's groups with the support of the female facilitator

during the monthly women's group meeting either in person or by phone, as evidenced by the total number of monthly entries made into the register during the implementation phase. See Table 4.2 in Chapter 4. The process of asking and documenting the statistics of local maternal and newborn health events was a very useful reflective practice that helped in maintaining a high level of awareness and profile of maternal and newborn health issue during the group meetings. The registers were also a useful record and a good advocacy tool to community leaders as stated in the field notes of the female facilitators, that group members frequently referred to the number of maternal events that occurred in their communities when discussing with other community members or leaders.

6.7.2. Data analysis and descriptive findings for income generating activities (IGA) training sessions

The IGA training sessions are part of the supportive implementation activities that were conducted to build the capacity of the group members so as to enable them deliver the main implementation activity (i.e the health literacy intervention).

A total of six training sessions for income generating schemes were conducted during the "implementation" phase of the research project, two sessions each in the three communities. The co-organization, co-planning and co-implementation of income generating activities training were very popular and helped a few women's group members livelihoods as well as garnered respect and credibility for them in their communities; this recognition was also shown by men and community leaders who might not be ordinarily be interested in maternal and neonatal health activities exclusively facilitated by female members of their community.

In addition, some resource mobilization skills were achieved among the women's groups members (as narrated through stories) during the evaluation period at the level of the women's group; a few women's group members had become quite established in making the

local petroleum jelly skin cream (Vaseline) and perfume (Humra) on a commercial basis following the IGA training they received. The co-organization, co-planning and co-implementation of basic group strengthening activities for participatory women's group meetings were generally achieved for some intended activities but were not for others. For example, the planning and organising of the peer-led participatory group meetings were readily done with little or no problems; major problems were faced by the female facilitators in retrieving reports of group meetings or outreach sessions. This was partly due to the inability of most members of the women's group to read and write; however the introduction of android mobile phones to the women groups made recording meeting sessions or taking pictures easy because these recordings or pictures were easily transmitted through Whatsapp at a very affordable cost to the research project.

The income generating activities training were cost-effective and the women's groups were always willing to partner with the research team to organise them. The women's group readily volunteered supporting materials such as firewood, training venues, crowd control during such training.

6.8. Lessons learnt from supportive implementation activities

a) Basic community level maternal and newborn health monitoring tool

The women's group register of local maternal and newborn events that was utilised during the implementation phase by members of the women's group suggests that it is feasible to design a basic tool that is useful for tracking/monitoring maternal and newborn health events at community level in a participatory manner. For instance, the practical process of filling in this basic register during the women's group meeting was in itself an opportunity for updating all the women's group members with information regarding the maternal and neonatal health status of their community/neighbourhood since some members might have missed or were

unaware of an event; and it was also a form of appraisal of the group activities within their communities. The register was usually filled by women's group members (who provided the information) and supported by one of the female facilitators (either in person or over the phone, who recorded and collated all the information)

b) Basic strengthening of women's group organizational capacity

The peer-led women's groups were able to conduct meetings, record brief meeting reports, were supported to fill their register, cooperate for collation of stories of significant change, organise community sessions for delivering sessions on healthy diets and danger signs in mothers and newborns after receiving a series of practical demonstrations/training by my research team. These training demonstrations included using phone technology; co-designing of basic registers/templates; and use of participatory visual methods (pictures and drawings). The team also provided mentorship and close ongoing communication to ensure groups were supported. This was done through weekly phone calls to obtain updates and monthly attendance (in person) at the women's group meeting in the community. However, the women's group leaders had telephone access to the team whenever they needed any support.

c) Financially empowering women's group members

The income generating activities training sessions that were co-sponsored by women's group members in all the communities were also conducted in a shared manner and were empowering for the women as generally documented in the field notes of the facilitators as well as respondents during FGDs/KIIs conducted in the evaluation phase. In addition, the attendance at IGA training session was always high; this is not surprising considering the high rates of poverty in these communities. There are a few success stories of at least three women who went on to build a business of trading in local perfume and petroleum jelly following the training sessions. Importantly, these sessions provide an avenue to build

community trust and participation as well as enhance the capability of the peer-led women's groups to be financially sustainable in the long term. The IGA training are initially targeted at supporting individual women's group members in developing skills that will assist them personally; but in the longer term, the women's group members will be encouraged to cooperate together in generating small amounts for running the activities of the group.

d) Establishing local systems for participatory monitoring and evaluation using phone technology

The MSC story templates that were co-developed for collecting MSC stories were replaced by simply recording stories on android phones which were later transcribed after transmission via Whatsapp. This method proved to be cheaper and easily adaptable in settings where the ability to read and write is limited.

e) Uses of phone technology

Phones that were shared with the three communities were useful for collating and sending reports of meetings and related activities. The phones were kept by the women's group leader and used during women's group meetings, IGA training or outreach activities to record meetings or take pictures during meetings which were later transmitted to the research team members using Whatsapp. The android phones helped in making communication easier and reduced project costs related to travelling physically to the study communities. In addition, the phones were also used by the women's groups to organise meetings or pass information about mothers that were sick.

6.9. Summary

The findings from the inception phase informed the development of peer-led participatory women's group meetings, peer-led participatory learning sessions with use of participatory

visual methods (of maternal and newborn danger signs including healthy diets) which will help in addressing the local (felt) health problems of mothers and newborns.

The findings and lessons from the implementation phase suggest that the main and supportive implementation activities discussed above were feasible and helped in empowering the women's group members to participate and improve their health literacy.

The next chapter describes the evaluation of the qualitative impact of the implementation activities using the MSC approach as well as the process evaluation of the implementation activities using the framework developed by Linnan and Steckler (2002).

Chapter Seven: The Evaluation Phase of the Research Project

7.1. Preamble

The maternal health literacy research project is a complex intervention consisting of health promotion activities and a mix of participatory research approaches which were designed, implemented and evaluated with the aim of improving maternal health literacy of women living in rural and peri-urban communities of Northern Nigeria.

This composite intervention of health promotion activities and participatory research approaches was intentionally selected to promote the inclusion and engagement of participants who are likely to be excluded by more conventional research approaches because they are disadvantaged and vulnerable due to their poor social circumstances. In line with this perspective, a participatory monitoring and evaluation method called the Most Significant Change (MSC) approach as well as FGDs and KIIs were conducted to assess the impact of the complex intervention primarily on women's group members and indirectly on community members.

In addition, a formative evaluation was also designed and conducted eight months after the end of the inception phase of the maternal health literacy research project using a framework for evaluating public health interventions (Linnan and Steckler, 2002). The key process evaluation components as proposed by (Linnan and Steckler, 2002, p.12) are context, reach, dose, recruitment, fidelity and programme implementation.

My decision to select a cut off period for conducting an evaluation of the women's group activities was based on balancing the considerations of the limited time available for me to complete my PhD thesis, and the minimum period needed for the complex health intervention

to take effect. However, the original intent of the research project was for the women's groups to continue to evolve beyond the evaluation phase as well as after the PhD research is completed.

7.2. Evaluating the research project

The participatory monitoring and evaluation method (MSC approach) was used to assess the qualitative impact of the complex intervention. The MSC evaluation primarily focussed on activities conducted by the peer-led women's group members at their meetings and secondarily during community sessions. Stories of significant change were collected from women's group members where available and analysed using the Most Significant Change (MSC) approach. The purpose of this was to evaluate whether participation by members of the peer-led women's group in the research project produced any perceived change amongst themselves or members of their community. The qualitative impact evaluation using the MSC approach also sought to understand what members of the peer-led women's group perceived were the important or significant health literacy changes that they had experienced or undergone during the research project.

The MSC evaluation findings were complemented by findings from the second set of FGDs and KIIs with peer-led women's groups and community members that were also conducted during the evaluation phase.

7.3. The Most Significant Change (MSC) Method

The MSC method is a participatory monitoring and evaluation that does not involve the use of indicators and it is a validated method used in evaluating any changes that occur during participatory development projects (Sango and Dube, 2014). The MSC approach "is participatory because many project stakeholders are involved both in deciding the sorts of change to be recorded and in analysing the data; and is a form of monitoring because it

occurs throughout the programme cycle and provides information to help people manage it. MSC contributes to evaluation because it provides data on impact and outcomes which can be used to help assess the performance of the programme as a whole"(Overseas Development Institute, 2009, para.1). The MSC method evaluates actual events/experiences of those affected by the project and makes sense out of it so as to improve the programme or project (Sango and Dube, 2014). A brief outline of the key steps involved in applying the MSC method are shown below together with the minor adaptations made during the research project

Stages of the MSC method (Serrat, 2009)

a) Getting started

The basis for using the MSC method is premised on collecting stories from women's group about their experiences of any impact that resulted from participating in women's group activities during the implementation period.

The initial stages of using the MSC method in the research project started with me providing an orientation to the peer-led women's groups once they were established at the onset of the implementation phase in October 2016. Thereafter, drafts of the story reporting template, (See Table 3 in Appendix VI) were presented to them and the system for using the templates to collate stories were discussed with women's groups and their assigned research team member to get them to become familiar with the approach.

b) Establishing domains of changes in critical health literacy

The domains of changes in critical health literacy that I used for the MSC method in my project were adopted from the domains proposed by (Chinn, 2011). These domains are

information appraisal, understanding the social determinants of health, and collective, organising and action.

c) Defining the reporting period

The reporting period for collecting stories of change from group members spanned over from between October 2016 to May 2017, which was the implementation phase of the research project.

d) Collecting stories of change

The task of collecting stories from group members was assigned to a specifically assigned female research team member who had been working with the group for a long time. This research team member was responsible for asking group members during monthly meetings or community sessions whether they had any story related to their participation in the research process, and to document such a story using the template as a guide. Any collected story was then further discussed openly at the group meeting before it was sent to me for collation.

e) Reviewing the stories within the organizational hierarchy (research team)

All collated stories were also discussed during the monthly meeting of the research team, for comments, questions and feedback from all research team members. Selection of the story that most depicts 'significant' change was also done at the end of the implementation period.

f) Providing stakeholders with regular feedback about the review process

At the next group meeting, the group members are also provided an explanation of the discussions and decisions taken during the meeting of the research team with regards to the submitted story

g) Setting in place a process to verify the stories, if necessary

The verification of any submitted story was mainly done at the level of the monthly group meetings and community sessions by the female research team member.

h) Quantification

At the end of the implementation period and during the monthly meetings, the total number of stories collected in each of the study community were counted.

i) Conducting secondary analysis of the stories en masse

At the end of the implementation phase, the transcripts of all the collected stories were analysed thematically. This analysed was influenced by the domains of critical health literacy proposed by (Chinn, 2011).

j) Revising the Most Significant Change process

The main revision to the MSC process that took place during the implementation phase was the transition from a paper based to an electronic based method for recording and transmitting the stories of change from group members. This transition brought about the need to re-train group members on how to use mobile phones to record stories with the support of their assigned research team member. The research team member also deleted the stories on the mobile devices once they had been transmitted to me for collation. This was done in order to maintain confidentiality of the group members.

7.4. Formative evaluation

Formative evaluation is suited for evaluating such a complex intervention where traditional or conventional methods may fail or be inappropriate (Stetler et al. 2004). Formative evaluation is also the preferred approach because of its relative ability to account for "key elements of the implementation process" (Stetler et al. 2004). Specifically, formative evaluation can shed more light on what actually did/did not happen within the study relative to the implementation plan, and what factors in the implementation setting, anticipated or unanticipated, influenced the actual degree of implementation.

There is no standard method for the formative evaluation of complex interventions (Sharma et al. 2017). However for the purpose of evaluating this project, I was influenced by evaluation guidance based on established social theories and methodologies proposed by the UK MRC (Moore et al. 2010).

7.5. Data collection procedures used for evaluation of the research project

The data collection procedures used for the evaluation of the research project included; using the women's group story telling template to record stories of significant change by women's group members, using FGD/KII guides to obtain community and women's group members' perceptions of the activities of the peer-led women's groups, using field notes of female facilitators and minutes of women's group meetings gain further insights into the FGD/KII findings. The development of the plan for the formative evaluation was influenced by the participatory research approach paradigm. In consultations with the female facilitators and peer-led women's group members, the project evaluation plan was discussed and arrangements made for conducting the evaluation in terms of data collection tools/methods, data sources and data-collection procedures (See Appendix XII for the evaluation plan).

7.6. Qualitative impact evaluation using stories of significant change

7.6.1. Data collection and analysis methods- stories of significant change

The story telling template/audio recordings using android phones were the main data collection tools used for collecting stories used for evaluating the qualitative impact of the complex intervention on the members of the women's group during the implementation and evaluation phases of the research project in the two study communities of Kayi (peri-urban community) and Tudun Kaba (rural community).

The female facilitators attached to each women's group elicited these stories by enquiring about the experiences of members of the peer-led women's groups regarding their participation in the peer-led women's group meetings as well as participatory learning sessions with participatory visual methods in their communities. The female facilitators also encouraged members of the peer-led women's groups to submit stories of how their overall participation in the research project have affected their lives at any time either via the phones given to the women's group or in person during the monthly meetings in the community. I subsequently (in consultation with my team) selected the stories deemed to be most significant and I also conducted secondary analysis for all the submitted stories of change collected from the women's group members in the two communities using thematic analysis method.

7.6.2. Findings from the stories of significant change (SSC)

The collected stories were read initially in front of the members of the women's group during the following meeting to verify or validate the stories before submission to me. We then meet to discuss them within the research team to decide whether the submitted story should be included in the analysis and if it depicts participation in the project as well as contains significant changes or improvements in health literacy as perceived by the women's group

member. If the story fulfilled this criteria, I proceeded to map the story on to the domains of critical health literacy. I was influenced by the critical health literacy domains presented by Chinn (2011) during the secondary analysis of significant change stories as well as the second set of FGDs and KIIs. The critical health literacy domains used for the mapping are; information appraisal, understanding the social determinants of health, and collective organising and action.

During the secondary analysis of the collected stories, I searched for themes that reflect the women's group members' learning and perceptions of changes in themselves in the areas of knowledge of danger signs in mothers and newborns/ healthy diets (knowledge/information appraisal), public speaking/advocacy skills on socio-cultural factors affecting maternal-newborn health (understanding the social determinants of health), skills in organising/conducting meetings, self-confidence and self-esteem, ability to influence community decisions and their own lives/self-image (collective organising and action) based on the selected story.

7.7. Descriptive findings for stories of significant change (SSC)

The qualitative impact evaluation of the research project was done using the MSC method and the second set of FGDs conducted with members of the peer-led women's group together with KIIs with selected maternal health gatekeepers.

The relative paucity of stories of change may be partly explained by the short implementation duration of the research project. The table below shows excerpts (summaries) from the seven significant stories of change collected from the two communities and the corresponding changes in critical health literacy they depict:

Table 7.1: Story of Significant Change Matrix

MSC Story id/Domains	Sub-Domains (Themes)	KbMSC1	KyMSC1
Changes in maternal health literacy	1. Increased awareness/knowledge of danger signs in mothers and newborns by group members	a) "I now notice within our village that the enlightenment given by the peer-led participatory learning sessions on maternal and neonatal danger signs gotten from the facilitators and women group members in the community is making some women to now understand the importance of going to the hospital whenever they have problem"	<p>a) "I also know a woman that was pregnant and has been swelling (kumburi) and falling sick..... So I paid a visit to her after her delivery; but on seeing her in that same condition (of swelling and sickness), I advised her to go to hospital and see a doctor for her condition; and she went (to see the doctor in the hospital)".</p> <p>b) "On the way to a (women's group led) community session, I saw a baby with dry skin, her eyes (was) white (and it) seems she was short of blood, I asked the mother - did you take her to the hospital (and) she said no; but she said they make use of local herbs. I now advised (her) to go to hospital and she agreed to take the baby to Asiya Bayero Hospital (a paediatric hospital in Kano) for check up"</p> <p>c) "As a member of this women's group, I have understood almost all the danger signs in pregnant mothers before and after delivery. I can now view a</p>

			pregnant mother with different kinds of conditions related to health and understand if she has a problem"
	2.Increased self confidence/assertiveness by group members (e.g. in referring or escorting community members to local health facilities)	b) "I was delegated by our women's group (on a voluntary basis) to support and escort one of the group members (Malama Bilkisu); to take her back to the hospital for the second time to get treatment for her painful breast swelling (mastitis)"	c) "As a member of this women's group, I have understood almost all the danger signs in pregnant mothers before and after delivery. I can now view a pregnant mother with different kinds of conditions related to health and understand if she has a problem"
	3. Increased capacity (social capital) in supporting each other and mobilising local resources for maternal and newborn health	c) "Following the birth of twin girls by a women's group member (who later developed painful breast swelling); I (Malama Jamila-women's group leader in Tudun Kaba) collected and fostered one of the twins (Baby Hassana). I am happy to be a mother to one of the twins (Baby Hassana) because I sympathised with the difficulties the baby was undergoing. I did this when I heard that she was being fed with Custard and powdered milk within 1 month of birth. This diet of Custard and powdered cow milk makes her constipated and she (Baby Hassana) always has difficulty when passing stool"	d) "I knew a woman in our village who was pregnant for the first time and was in labour for 3 days (but) she was not taken to the hospital because the elders of the house that assessed her said she was not due to give birth yet. After some days, they (the elders) decided to call a TBA called (Kaga ta kowa) who was affiliated to our women's group and attends our community sessions. She (TBA called Kaga ta kowa) advised them to take her to the hospital; where She was operated upon but the baby died and the mother suffered a lot."

KbMSC1 = SSC story from women's group member in Tudun Kaba community

KyMSC1 = SSC story from women's group member in Kayi community

Id = Identification

The most significant story of change selected from Tudun Kaba community by the research team was the story of child fostering which corresponds to the collective action sub-domain of the critical health literacy construct. While the most significant story of change selected from Kayi community by the research team was the story of confidence in identifying different kinds of danger signs in a pregnant woman which corresponds to the information appraisal sub-domain of the critical health literacy construct.

Further (secondary) analysis of the transcripts of all the collected stories of significant change as well as the records of peer-led meetings "tell stories" by members of the women's groups that relate to themes of social capital and empowerment. They include stories of how the women have been able to develop strong social ties/networks (social capital) with each other. In both communities, women's group members are frequently consulted by other community members when women go into labour (self/group efficacy); and some women in both communities have now taken up the vocation of making and marketing local perfume.

7.8. Lessons learnt from stories of significant change (SSC/MSC)

a) Establishing a local system for collating stories of change

I established a local system for collating stories of significant change at the onset of the implementation phase of the project which was paper based and involved the use of a basic paper template that was filled by the female facilitator attached to the peer-led women's group. The lesson from this is that a system for collecting stories as they are generated by the groups ensured they could be documented, archived and eventually used for evaluation purposes.

b) Using phone technology for local collation of stories

I later introduced a more practical method which helped in improving the yield and reducing the costs of stories collected. The modified collation system for stories of significant was improved and made easier by making arrangements for women's group members to tell their stories either via phone conversations (which could be automatically recorded) or audio recordings of their stories which were later sent a mobile phone application called Whatsapp messenger or through face to face meetings with the female facilitator using a paper based template. So the lesson is that a phone based system for collecting stories is better for groups that cannot read or write, cheaper and easier to use than a paper-based system.

7.9. Qualitative impact evaluation from second round of KIIs and FGDs

7.9.1. Data collection method using KIIs

The additional method used in evaluating the qualitative impact of implemented activities were the second set of KIIs conducted in the three study communities during the evaluation phase of the research project. The tools for data collection during the KIIs were digital audio recorders; the audio recordings of the interviews were in Hausa; and for the purpose of keeping as close as possible to the meanings in the recordings, the audio recordings were also transcribed in Hausa. A total of six KIIs were conducted during the evaluation phase, three in Kayi, two in Tsamawa and three in Tudun Kaba communities respectively.

7.9.2. Data collection method using FGDs

The other method used in evaluating the qualitative impact of implemented activities was the second set of FGDs conducted in the three study communities during the evaluation phase.

The tools for data collection during the FGDs were digital audio recorders; the audio recordings of the interviews FGDs were in Hausa; and for the purpose of keeping as close as

possible to the meanings in the recordings, the audio recordings were also transcribed in Hausa. The FGD sessions were held with the peer-led participatory women's group members as well as female community members that were not members of the peer-led women's group in three communities during the evaluation phase of the research project. These FGDs were facilitated by different but trained female moderators; who specifically explored the experiences of the women regarding the activities implemented during the research project. A total of five FGDs were conducted, two in Kayi, one in Tsamawa and two in Tudun Kaba communities respectively.

7.10. Data analysis methods for KIIs and FGDs

The transcripts of the KIIs/FGDs were initially read by me several times, and discussed with the three facilitators of the women's groups during the initial stages of data analysis. Thereafter, a preliminary thematic framework/matrix and coding scheme for these transcripts were designed in MS Word based on an inductive approach.

I then coded the data from the FGDs and KIIs, before proceeding to organise and chart by manually cutting and pasting the "chunks" of coded data from the transcripts of the FGDs and KIIs into the already designed thematic matrix. It was at this point, that the extracted/excise Hausa phrases/words were translated into English side by side within the thematic matrices and finally interpreted along with the emergent themes.

7.11. Findings from second set of KIIs and FGDs

The emergent themes from the FGDs and KIIs went through several revisions in consultation with my research team and PhD supervisory team members. The FGDs and KIIs were facilitated across the three communities; namely Kayi, Tudun Kaba and Tsamawa respectively by the trained moderators. After the FGDs and KIIs were completed, including all the transcriptions; I carried out thematic analysis of the transcripts of the FGDs and KIIs. I

used the thematic analysis technique earlier described (See page 89, section 4.9) under the methodology chapter.

However for the purpose of the evaluation, I modified the thematic analysis technique I had previously used during the analysis of the first set of FGDs and KIIs. In the analysis of the second set of FGDs and KIIs, I was still influenced by the themes previously obtained during the analysis of the first set of FGDs and KIIs (See page 122, section 5.5)). But in addition, I searched for other codes that provided information about the main and supporting implementation activities as described in the implementation phase chapter as well as the changes in critical health literacy domains of the women's group members.

The findings from the analysis of the FGDs and KIIs were still largely aligned with the findings from the first set of FGDs and KIIs. **See Tables 3a and 3b in Appendix IV.**

The additional findings from the second set of FGDs and KIIs that were related to the main and supportive implementation activities and their effect on maternal health literacy are presented below.

Additional findings and themes from the second set of FGDs and KIIs

1) Local presence of women's group and maternal health activities

There were discussions related to the existence of the women's groups and their activities which centred on maternal health literacy and other related maternal health activities in the two communities where the women's groups were established. The activities conducted by the groups that relate directly to maternal health literacy include the peer-led participatory learning sessions, for example during the KII in Tudun Kaba a respondent said "*I see their members going from house to house discussing with mothers on how to take care of themselves and their newborns*" representative of the village head in Tudun Kaba. This was

also reiterated during the FGDs conducted at Tudun Kaba where a respondent said "*we have benefitted greatly from the women's group. Now once we encounter any of those danger signs, we immediately go to the hospital*" (female community member at Tudun Kaba); as well as in Kayi community where a respondent said that "*in my opinion, the women's group is effective because they give us information on how to take care of ourselves as well as encourage us to go for ANC and childbirth in the hospital*" (women's group member, Kayi).

Another activity related to maternal health literacy which was influenced by the activities of the women's group, was the attention and discussion of the role possibly played by some local social determinants of health in perceived secular decreases in maternal deaths by community members. For example a respondent during the KII in Kayi said "*I attribute this (general decline in maternal deaths) to the help of Allah as well as increasing civilization (awareness) with the associated increase in ANC attendance, education, construction of health facilities and women's groups that are increasing in number in both towns and villages*" (Village head of Kayi). The role of economic factors in influencing maternal health was also highlighted by a respondent during the FGD in Tudun Kaba where she said "*I refuse to go to hospital early when pregnant to commence ANC because I don't want to burden my husband with expenses. Some women also don't go to the hospital at the onset of labour, they prefer to give birth at home and only go to the hospital when their condition has already deteriorated*" (women's group member, Kayi).

Another pertinent finding was how the women's groups were involved in initiating cultural 'shifts' in local maternal health practices and influencing maternal health literacy amongst the vulnerable population (young and newly married girls) within their communities; group members had started carrying out the role of advising young/newly married pregnant girls about danger signs during community sessions. This was a role that was hitherto, traditionally left to older women in these communities because of the culture of 'shyness' attached to

issues of reproduction in these communities. A respondent during the KII said *"There are women that I saw at the house of the village head who inform young pregnant girls about their health during pregnancy"* (Imam at Kayi). This was further reiterated during the FGD at Tudun Kaba by one of the respondent who said *"if there is one of our group members living nearby (a young newlywed), she will tell her what danger signs and healthy diet to look out for"* (women's group member, Tudun Kaba).

Other activities associated with women's groups and which may have potential influence on maternal health literacy include the suggestions by a respondent during the KII who advocated for the support and permission from husbands of members of women's group to allow them to engage in community sessions such as peer-led participatory learning sessions. He said *"My advice to the husbands of the women's group members is to be supportive to their wives because it is in their best interests for their wives to give birth safely. Husbands can be supportive to their wives by permitting them to attend the peer-led women's group meetings as well go round in the village when conducting health literacy activities"* (representative of the Village head of Tudun Kaba). Another community leader also encouraged members of the community to cooperate with the women's group members. **See Table 3c, 3d and 3e under Appendix IV for more details.**

2) Development of appraisal abilities by group members and taking action

The women's group members showed some new critical health literacy abilities which they did not previously possess. This is indicated by their developing appraisal abilities in identifying danger signs and taking action. For example during the FGD, a respondent said *"in all honesty, I can say that the activities of the women's group has an effect on us because, we can now identify danger signs in a pregnant women and advise her to go to the health*

facility for a checkup. We didn't have this ability in the past." (female community member, Tudun Kaba). See Table 3c, 3d and 3e under Appendix IV for more details.

3) Presence of a different maternal health group in Kayi (peri-urban community)

A relevant finding was the increased reference to an erstwhile dormant maternal health group consisting of local TBAs, village head, ward head in the peri-urban community (Kayi) following the establishment and activities of the women's group. This older maternal health group was part of the village development committee vested with the mandate for promoting maternal health. It had funding and training from some NGOs working in the state but their activities stopped when these projects folded up. There was no such maternal health group established either in Tudun Kaba or Tsamawa communities respectively. A community leader said "We have a group concerned with safe pregnancy and childbirth (consisting of TBAs, village heads and ward heads) but we only meet occasionally from time to time" (Village head of Kayi). See Tables 3d and 3e under Appendix IV for more details.

4) Effect of IGA training

The series of training on income generating activities was an empowering opportunity for women especially in the rural community as stated by a respondent during the FGD "we have also learnt how to make skin cream (Vaseline), perfume and scented incense" and "I have also started selling the Vaseline that I make commercially" (women's group member at Tudun Kaba)

Following the analysis of the second set of FGDs and KIIs; and their mapping unto the critical health literacy domains (Chinn, 2011), Table 7.2 further show how these findings from the analysis of the second set of FGDs and KIIs were mapped unto the critical health literacy domains.

Table 7.2: Domains of critical health literacy adapted from Chinn (2011)

Critical health literacy domains	Skills	Sources/Mechanisms	Observable outcomes derived from themes second set of FGDs and KIIs
Critical appraisal of information	- Cognitive skills in abstracting, remembering, synthesising and presenting pictures/drawings of danger signs/healthy diets (participatory visual methods) during peer-led sessions	- Using participatory visual methods to aid learning and teaching during peer-led sessions	Collection of pictures/drawings of danger signs/healthy diets for mothers and newborns
Understanding social determinants of health	Cognitive skills in synthesising and linking local maternal - neonatal health outcomes to structural and cultural factors such as poverty, weak organization of health systems, permission and support of husbands	- FGDs and women's group register and experiences during peer-led sessions gave more insights into social determinants of health	Questioning of structural (social) and cultural factors responsible for local maternal-neonatal health outcomes
Collective Action	- Women's group members having sufficient self efficacy/confidence to participate in planning meetings (planning, goal setting, prioritising) - Women's group members having sufficient self efficacy to organise (planning, goal setting, prioritising) peer-led meetings and community	- Confidence in organising peer-led sessions - Taking charge/giving advice when pregnant women develop health problems - Becoming a community influencer for maternal - newborn health discussions	- Preferred health promotion priority condition co-selected, danger signs for mothers and healthy diet for mothers and newborn - Preferred health promotion intervention co-selected which are peer-led meetings and community sessions - Delivery of peer-led meetings and

	<p>sessions</p> <ul style="list-style-type: none"> - Women's group members provide knowledge on danger signs and healthy diets - Women's group members having sufficient self efficacy and knowledge to serve as a local resource for maternal-neonatal health within and outside her community 	<ul style="list-style-type: none"> - Sourced from reports of peer-led sessions, stories of change and FGDs/KIIs 	<p>community sessions by peer-led women's groups</p> <ul style="list-style-type: none"> - Community leaders and members consult women's group for advice on maternal-neonatal health
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The findings obtained from analysis of the second set of FGDs and KIIs, generally revealed similar themes after viewing the data through the lens proposed by Chinn (2011). This supports and triangulate with the findings from the stories of significant change.

7.12. Lessons learnt from the second set of KIIs and FGDs

The involvement of the women's group members throughout all the stages of the co-analysis of the qualitative research data obtained from the KIIs and FGDs was not possible during the evaluation phase, partly because I didn't have enough time or capacity to train the members of the peer-led women's group to carry out qualitative data analysis and I lacked the funds to pay for such training. Nevertheless, the inability to involve the women's group members throughout all the stages of the co-analysis was not in keeping with the recommended best practices of the CBPR approach. However, in order to minimise the effect of non-involvement of the women groups members directly and throughout all the stages of analysis, I read all the transcripts of the KIIs/FGDs in consultation with the female facilitators and also discussed themes and issues arising from them with the women's groups during the process of data analysis. I also repeated this process whilst analysing the transcripts of the women's group meetings and stories of significant change.

7.13. Formative evaluation - methods and findings

I conducted the formative evaluation of the research project during the evaluation phase based on an existing framework (Linnan and Steckler, 2002). And I conducted the evaluation by framing evaluation questions which were guided by this framework; and I then used relevant information from the research project outputs to address each evaluation question (see Table 7.3 below).

Table 7.3: Evaluation Questions for the Formative Evaluation of the Research Project

Serial Number	Evaluation Parameter/ Domain	Evaluation Question	Information Sources
a)	Fidelity	<p>1. To what extent was the CBPR process implemented as planned?</p> <p>2. To what extent was the auto-diagnosis stage of the community action cycle method process implemented as planned?</p> <p>3. To what extent was the participatory women's group process implemented as planned?</p> <p>4. To what extent was the MSC process implemented as planned?</p> <p>5. To what extent were the assessments of maternal and newborn health in the selected communities using qualitative research methods implemented as planned at inception phase and at evaluation phase?</p>	<ul style="list-style-type: none"> - Female facilitator field notes - Minutes of peer-led participatory women's group/facilitator-led participatory women's group meetings - Transcripts of FGDs and KIIs - Stories of significant change - Peer-led participatory women's group register of maternal and newborn health events
b)	Dose delivered	<p>1. To what extent were all modules of the auto-diagnosis sessions with the facilitator-led women's group implemented?</p> <p>2. To what extent were all peer-led participatory learning sessions by the peer-led participatory women's group implemented?</p>	<ul style="list-style-type: none"> - Female facilitators field notes - Minutes of peer-led participatory women's group/facilitator-led participatory women's group meetings

Serial Number	Evaluation Parameter/ Domain	Evaluation Question	Information Sources
			<ul style="list-style-type: none"> - Transcripts of FGDs and KIIs - Stories of significant change
c)	Dose received	<p>1. Were the women's group members satisfied with the facilitator-led participatory women's group meetings and auto-diagnosis stage of the community action cycle method activities?</p> <p>2. Were the facilitators of participatory women's groups satisfied with the auto-diagnosis stage of the community action cycle methodology training/modules?</p> <p>3. Did women's group members fully participate in the peer-led participatory women's group meetings and peer-led participatory learning sessions (using participatory visual methods) activities?</p> <p>4. Were the peer facilitators of women's groups satisfied with the participatory women's group meetings and activities conducted during the peer-led participatory learning sessions (using participatory visual methods)?</p> <p>5. Did community members fully participate in the activities conducted during the peer-led participatory learning sessions (using participatory visual methods) during community sessions?</p>	<ul style="list-style-type: none"> - Female facilitators field notes - Minutes of peer-led participatory women's group/facilitator-led participatory women's group meetings - Transcripts of FGDs and KIIs - Stories of significant change
d)	Reach	1. Was the auto-diagnosis stage of the community action cycle	- Female facilitators field notes

Serial Number	Evaluation Parameter/ Domain	Evaluation Question	Information Sources
		<p>method activities delivered to at least 80% of the women's group members?</p> <p>2. Was the peer-led participatory learning sessions delivered in at least eight sites/venues in each of the study community?</p>	<ul style="list-style-type: none"> - Minutes of peer-led participatory women's group/facilitator-led participatory women's group meetings - Transcripts of FGDs and KIIs - Stories of significant change
e)	Recruitment	<p>1. What procedures were followed to recruit women to women's group meetings /auto-diagnosis sessions?</p> <p>2. What procedures were followed to recruit women's group members to be peer facilitators at women's group meetings and resource persons at peer-led participatory learning sessions in the community?</p>	<ul style="list-style-type: none"> - Female facilitators field notes - Minutes/attendance list of peer-led participatory women's group/facilitator participatory women's group meetings - Stories of significant change
f)	Context	<p>1. What were the barriers and facilitators to implementing the CBPR?</p> <p>2. What were the barriers and facilitators to implementing the auto-diagnosis sessions (participatory needs assessment)?</p> <p>3. What were the barriers and facilitators to implementing the facilitator-led participatory women's group?</p> <p>4. What were the barriers and facilitators to implementing the peer-led participatory women's group?</p> <p>5. What were the barriers and facilitators to implementing the MSC (participatory monitoring and evaluation) method?</p>	<ul style="list-style-type: none"> - Female facilitators field notes - Minutes/attendance list of peer-led participatory women's group/facilitator participatory women's group meetings - Transcripts of FGDs and KIIs - Stories of significant change

Serial Number	Evaluation Parameter/ Domain	Evaluation Question	Information Sources
		6. What were the barriers and facilitators to implementing the assessments of maternal and newborn health in the selected communities using qualitative research methods at the inception and evaluation phases of the research project ?	

The responses to the evaluation questions are provided below

7.13.1. Fidelity of intervention delivery

The key principles of the CBPR approach such as working through the CAB and ensuring that the co-researchers are fully involved in the CBPR process was mostly adhered to during the research project. However, the role of the peer-led women's groups was limited during data analysis of stories of significant change, as well as the transcripts from FGDs and KIIs because I had limited time, resources and money to train them in conducting the qualitative data analysis. This was a limitation in terms of fidelity which I minimised by constantly contacting and consulting with the women's group members whilst I was conducting the qualitative data analysis.

In addition, I conducted all the prescribed auto-diagnosis sessions (except one) with the facilitator-led women's group in accordance with the auto-diagnosis method (Howard-Grabman, 1993) during the inception phase of the research project.

All the activities planned by the facilitator-led women's group were fully implemented in the two study communities; while all the activities planned by the peer-led participatory women's group were fully (100%) implemented in Kayi community and almost completed in the rural study community (Tudun Kaba) which was almost (87.5%) completed.

The evaluation of the qualitative impact of the research project using the MSC approach was also carried out as planned/recommended in the literature but it was affected by the short period (eight months) available for the collation of significant change stories for studying the qualitative impact of the research project.

The FGDs and KIIs were conducted as planned; during the inception (first set of FGDs and KIIs) and evaluation (second set of FGDs and KIIs) phases respectively. However, not all the planned categories of maternal health "gatekeepers" could be interviewed because only the peri-urban community (Kayi) had a local traditional barber. Importantly, three of the maternal health gatekeepers at the rural community (Tudun Kaba) insisted on being interviewed together because *"they have nothing to hide"* from each other during the first and second set of interviews (KIIs).

7.13.2. Dose of intervention delivered

All the peer-led women's group community sessions were successfully delivered in the peri-urban community of Kayi and also in Tudun Kaba except for one, during the implementation phase of the research project.

A total of fourteen peer-led women's group meetings out of a maximum of fourteen meetings were held in Kayi (peri-urban) community while nine out of a maximum of fourteen peer led women's group meetings were held in Tudun Kaba (rural) community.

7.13.3. Dose of intervention received by the participants

The members of the facilitator-led women's groups participated actively in the discussions and other activities such as story telling or role plays during women's meetings. This is supported by the information/outputs obtained after the auto-diagnosis sessions regarding the felt maternal and newborn health needs and problems illustrated in Tables 5.3 and 5.4 the inception phase (Chapter 5).

The enthusiasm to enrol into the facilitator-led women's group meetings women in the study communities was quite high as evidenced by the fact that the proposed target for the women's group enrolment was oversubscribed. The alternate strategy of income generating activities (IGA) training had to be organised partly to cater for the excess number of women that

indicated their interest in joining the women's group, as documented in the field-notes of the assigned female facilitators that attended the group meetings. Throughout the duration of the research project, the women's groups always got replacements easily whenever there was a vacancy in the group. For example, one of the women's group members in Kayi community died during the study, while one of the women in Tudun Kaba community moved away to another village when her husband left.

The members of the peer-led women's groups also participated actively in the group discussions about local maternal health problems and during preparatory training/rehearsals before peer-led community sessions on danger signs and healthy diets. This is supported by the reports of peer-led women's group meetings, significant change stories, second set of FGDs/KIIs and feedback from the female facilitators attached to the respective women's groups.

The peer-led women's groups members regularly attend the peer led women's group meetings as evidenced by the attendance list for meetings. The peer leaders of the women's group also regularly organised the group meetings as evidenced by the number of group meetings that were conducted and led by them during the implementation phase of the research project.

7.13.4. Reach of the intervention

The reach of the project among the peer-led women's group during the project implementation was probably widespread because all the members of the peer-led women's groups had the training and opportunity of leading the peer-led participatory learning sessions in the community on danger signs and healthy diets. This assumption is based on various statements in transcripts of group meetings, stories of significant change and field-notes of facilitators, by group members who stated that they have passed along information about

maternal danger signs at several informal sessions at homes, within their communities and even in other communities that they visit.

However, it is difficult to precisely quantify the reach of the intervention within the respective study communities because the number of peer-led participatory learning sessions held at designated venues or occasions in the community by the peer-led women's groups depended on a constantly varying timetable of occasions that could be used for the learning sessions as well as different venues in the community. Examples of venues in the communities include local Islamic schools, house of the village head, house of a member of the peer-led women's group, while examples of occasions include local naming ceremonies, weddings receptions and local Islamic schools' graduation ceremonies in the study communities. A total of eight community sessions were held in Kayi (peri-urban - estimated population of 1892 inhabitants) and seven community sessions in Tudun Kaba (rural - estimated population of 1212 inhabitants) community by the peer-led women's groups respectively. However, this is an underestimate because there were stories (from meetings and stories of significant change) of the women's group members, going to adjacent communities to advice female relatives with pregnancy related health problems.

7.13.5. Recruitment into the women's groups

The announcements for the recruitment into women's groups was done by the village announcer (town crier) based on the criteria I laid down; the town (announcer) crier invited all women of child-bearing age in the study communities to the house of the village head for a meeting. At the meeting, the women were briefed on the research project and invited to join the women's group if they are interested. After enrolment during the inception phase, the enrolled women participated in the series of auto-diagnosis sessions supported by an assigned female facilitator who was also a dedicated research team member.

The enrolment for the women's groups was on a first come first served basis; however the women's group in Tudun Kaba (rural) community was oversubscribed and we had to design an alternative training activity to cater for the additional women.

After completion of the auto-diagnosis sessions and at the onset of the implementation phase of the research project, the facilitator-led women's groups transitioned into peer-led women's groups and therefore their female facilitators handed over responsibility to their peer leaders. This transition to peer-led women's groups was preceded by group elections into three leadership positions by the women's group members; the elected peers now took over the leadership of the women's groups thus transforming them into peer-led women's groups in the two study communities.

Peer facilitators were also selected from among members and leaders of the women's group either via nomination by the other members of the women's group or volunteers to participate in the peer-led community sessions (peer-led participatory learning sessions). The peer facilitators receive training by the research project team on participatory visual methods on danger signs and healthy diets in mothers and newborns prior to conducting peer-led community sessions.

7.14. Contextual facilitators and barriers to implementation

The deliberate choice of women to be the research team members and facilitators for the women's group was so as to be culturally sensitive and this greatly helped in building trust and community acceptance for the research project. While the use of participatory research best practices/methods, such as working with the Kumbotso CAB facilitated "community entry" by the facilitators during the inception phase of the project and the formation of women's groups promoted the participation of rural women in discussions regarding maternal and newborn health in their respective communities.

A number of factors presented a risk to conducting the research project at the onset; and they include the long time it took to obtain ethical clearance locally for the research because of local strikes (industrial action) by unions as well as general cynicism by some community members towards research by "outsiders" or with government programmes, as documented in my research diary after encounters with community and other members in the field. In addition, particularly during the rainy season or Muslim Ramadan month of fasting, community members were unwilling to allocate attention/time for the research project activities because they were busy with farming, because agriculture is their major source of livelihood. This situation was further compounded by the difficulty in getting to those communities because of the poor terrain which gets worse during rainy seasons.

In addition, it was difficult to restrict the discussions at the women's group meetings only to maternal and newborn health matters; other local problems were also discussed at women's group meetings as well intermittent interruptions by other women, children and nursing babies as well as occasional delays in commencing meetings because the meetings were always held in a community setting.

7.14.1. Other facilitators and barriers to implementation

It is challenging to use the CBPR method because it requires having trained and skilled facilitators who have high level of motivation. And having to work through female facilitators and in Hausa is challenging because it may add layers of interpretation and analysis of the data. Ultimately, it must also be noted that obtaining permission to conduct CBPR at the community level for maternal and newborn health is hierarchical and heavily gendered.

Working as a male researcher in a heavily gendered environment is challenging because the study settings are typically patriarchal. For example, all the women's group meetings are

conducted indoors (partly because of purdah and privacy) in one of the houses of the women's group members (who were all married); no adult male is permitted entry into the household except the husband or the male relatives of the wife or male children belonging to that household or pre-pubescent children generally. Fortunately, pictures and audio recordings of sessions were permitted and the female facilitators were able to compile a record of these.

7.15. Lessons learnt from the formative evaluation

a) Establishing local documentation and record keeping systems

It is very important to establish or (if they already exist) strengthen local documentation and record keeping systems especially in local communities that historically do not have a tradition of doing this. It is important to do this because it will be almost impossible to be able to conduct an evaluation of the participatory research processes which is a shared responsibility between the researcher and co-research without such a system in place.

I designed a basic paper-based report format for taking an attendance list of members and brief minutes during meetings of the peer-led women's groups in their respective communities. This was done in collaboration with a member of the group and the female facilitator attached to the group; the records were kept in the custody of the peer-led women's groups but copies were made and submitted to me by the female facilitator.

b) Using cost effective alternative technologies for non literate populations

The use of phone technology greatly helped in the local documentation and record keeping by providing a cheaper and practical way for getting and reports of meetings via audio recordings of the meetings.

7.16. Findings and analysis for the 'control' or 'comparison' community - Tsamawa

There was no women's group in Tsamawa during the research project because it was designated to be the control community. However the first set of FGDs and KIIs were also conducted in Tsamawa during the inception phase, as well as the second set of FGDs and KIIs conducted during the evaluation phase respectively.

The thematic analysis findings for the FGDs and KIIs conducted at the inception phase in Tsamawa were generally similar in nature to other study communities. However, the thematic analysis findings of the second set of FGDs and KIIs conducted at the evaluation phase in Tsamawa differed clearly with those done in Tudun Kaba and Kayi communities in terms of varied discussions/comments regarding the activities of women's group and types of skills that some group members have acquired in the latter communities which is not unexpected.

The qualitative impact evaluation using the MSC approach could not be carried out in Tsamawa community because no story of significant change was elicited from the Tsamawa community during the duration of the research project. This was in spite of regular monthly visits and weekly phone calls to the female focal point in the community consisting of the local TBA, TBA apprentice and the wife of the acting village head of Tsamawa community who were also issued a phone and trained on how to use it. This was similar to the arrangement made for the two other communities where the women's groups were established. The criteria used in selecting the 'control' or 'comparison' community have already being described under the inception phase chapter.

The formative evaluation of the research project activities in Tsamawa was greatly limited because of the absence of a women's group. The few formative components/activities that could be analysed include the IGA training that was also conducted in Tsamawa. There were also a total of two IGA training sessions that took place in Tsamawa during the

implementation phase of the research project. The training was coordinated by the focal point and the female facilitator responsible for supporting Tsamawa. It is pertinent to note that, even though the IGA trainings were well attended by the women in Tsamawa, there was limited references to the IGA trainings by community members during the FGDs. All these activities were assessed based on the field notes written by the female facilitator designated to support Tsamawa community.

The CBPR process was implemented up to the level of obtaining permission to engage with the community as well as to meet with the focal point and women generally in the community from time to time (for IGA training and FGDs/KIIs). However, the auto-diagnosis approach, participatory women's group, peer-led participatory learning sessions using visual methods were never instituted in Tsamawa community.

7.17. Summary

The qualitative impact evaluation of women's group members using the MSC approach as well as FGDs and KIIs after eight months of implementation showed that some changes occurred in the critical health literacy domains of knowledge/information appraisal, understanding of the social determinants of health and collective organising and action in the women's groups in the two study communities of Tudun Kaba (rural) and Kayi (peri-urban) which was not observable in the comparison community of Tsamawa (rural).

The formative evaluation of the complex intervention that took place in the communities (Tudun Kaba and Kayi) where women's groups were established showed the feasibility of using participatory research methods to design and implement health literacy interventions that can empower women living in poor rural or peri-urban communities with health knowledge and capacities to improve maternal and new born health in their communities.

The next and final chapter will provide the summary of the key findings and a discussion of the significance, implications and limitations of the findings and overall lessons learnt from the research project.

Chapter Eight: Discussion and Conclusion

8.1. Preamble

The aim of my thesis was to assess whether an action research approach using a mix of participatory research methods can be used to build the health literacy of, and empower local women who are largely vulnerable, illiterate, living in poor, underserved peri-urban and rural areas of Northern Nigeria. My research project used participatory research approaches to co-produce a complex maternal and newborn health intervention that aimed to improve the health literacy of mothers living in rural and peri-urban communities of Northern Nigeria.

My main assumptions were that participatory research approaches can be used together with women's group members to build their critical health literacy skills regarding knowledge of danger signs and healthy diets amongst mothers and newborns. I reasoned that the women's group members who undergo these processes, by participating in discussing, and reflecting and making decisions regarding local maternal and newborn health problems would help to conscientize and empower the women's group members to subsequently conduct local community activities that contribute towards a reduction in the deaths of mothers and newborns in their communities. The available evidence and parallels from the literature that informed my assumptions include the systematic review which studied the impact of participatory women's groups in reducing maternal and neonatal mortality that were reported from Nepal, India, Bangladesh and Malawi (Prost et al. 2013).

Additionally and based on discussions with female facilitators and women's group members, I considered the inclusion of logistic, income generating activities training and organizational capacity building activities for the women's groups based on identified gaps and needs so as to potentiate and facilitate the participatory processes during my research project. This line of

reasoning is also supported by evidence from a review of community-based participatory researches conducted in the US which showed evidence of the benefits accruable to CBPR partnerships of "acquiring organizational skills" (Viswanathan et al. 2004, pg.15) as well as strengthening of "organizational stability through additional income and capacity" (Viswanathan et al. 2004, pg.107).

In this chapter, I will outline the key findings and lessons learnt from the different phases of the research project. I will also discuss and situate the findings within the literature, particularly the theoretical frameworks of health literacy and participatory research approaches previously highlighted in my literature review (Chapter 2). I will also provide my personal reflections on findings related to health literacy as well as the participatory research approaches used during the research project. I will end this chapter by identifying the implications of my findings and lessons learnt for public health policy, practice and future research.

8.2. Outline of key findings and lessons

In this section, I will outline the key findings and lessons learnt during the research project in terms of 1. the planning/design, implementation and evaluation phases of my research project; 2. the potential pathways/mechanisms at work during implementation of the participatory research approaches; 3. factors that influenced the implementation of the participatory approaches; 4. challenges faced during the research project.

8.3. Overall findings and lessons learnt from the inception phase

The inception phase produced useful general and context specific insights that guided the implementation phase of the research project. In addition, the CAB expedited the processes of obtaining permission from traditional community leaders, community entry, selection of female facilitators, selection of study communities and, most importantly, obtaining

community trust. This supports previously published findings from studies regarding the usefulness of a community coordinating or governance structure for CBPR. This structure may have different names such as community advisory board or community steering committee (Ahari et al. 2012; Kobeissi et al. 2011). Another important finding was the need to identify the capacity building gaps and training needs for the female facilitators as well as peer facilitators so as to provide appropriate training and plan supportive supervision activities for them. This is important because identifying and bridging these gaps is an essential step towards creating a 'horizontal' power relationship between the researcher and co-researchers which is a key principle in the emancipatory/transformational research paradigm that underpins participatory research approaches (Chilisa, 2015).

An important lesson to be considered from the design phase is the importance of timing and preparations to be done when applying for funding to conduct CBPR. This is because preparing for CBPR projects requires relatively longer, more participatory and iterative steps which requires multiple inputs from community stakeholders, and can be influenced by other factors outside the researcher's control. These factors might make it more difficult to fit CBPR proposals into most calls for funding. The difficulty in submitting CBPR proposals for most funding cycles because of their nature and longer duration have been highlighted by (Karmaliani et al. 2009).

In addition, the longer duration needed to satisfactorily prepare and conduct CBPR also makes it too expensive for even highly committed communities and researchers from academia to fund CBPR projects on their own, without some institutional support. However, it is also important to reflect on whether accepting support from some funders may be associated with loss of independence (or intent) of the participatory research process due to restrictions or requirements that some funders might impose on such projects or the requirements for applying for such funding. The financing of my CBPR fieldwork was

largely made possible because I was awarded a University of Sheffield Data Collection Grant, had support from my institution and also because the CAB helped me to recruit local part time project staff who were willing to accept relatively low wages.

Another lesson to consider at the planning stage, is that CBPR takes a long time to plan and initiate, therefore it is important to take this into consideration when planning a CBPR project generally for a time limited project. My research project spanned a period of six years and would have been impossible to fit into a three year (full time) PhD programme. I was only able to do this CBPR research project because I was registered for the part time (remote location) programme, which can take up to eight years.

8.3.1. Ethical and practical issues in community based participatory research

One of the ethical concerns commonly encountered in research designs is related to obtaining informed consent. However in community-based participatory research, obtaining informed consent from the group or community where the research takes place is equally and particularly important (Banks et al. 2013). In line with this, the permission of traditional leaders was obtained (via the CAB) and the informed consent of women's groups and other community members were always sought at the beginning of group meetings, FGDs and KIIs respectively.

However, there were instances especially during the meetings (and occasionally during the FGDs and KIIs) where strict confidentiality could not be kept or was not desired. This is because 'openness' during CBPR processes is part of trust building, and too much insistence on privacy during community interactive sessions could be misinterpreted as distrust of fellow community members. The local culture was also in support of this openness, and my willingness to accommodate their cultural norms enhanced the diffusion and uptake of the women's groups and their activities in the study communities.

The use of phones by women's groups for recording and transmitting data during the research project also raised data management and governance challenges for ensuring additional confidentiality. The project staff minimised any potential breach of confidentiality and data quality at the community level by ensuring that phones were mainly entrusted to the women's group leaders, were password protected, and the women's group leaders and their attached research team members were trained on how to delete any stored information after it has been transmitted to me or the facilitators for collation. These additional safeguards were important because these are poor and non-literate women, and the information on their mobile phones can easily be hacked or altered. The collated information was stored on an encrypted one-terabyte storage media at the departmental office at Aminu Kano Teaching Hospital, Kano. However, it is important to note that mHealth and other digital technologies have huge potentials in bridging health and health system gaps in LMICs (PACT. Inc, 2014) and this has also been espoused in the Nigeria National Health ICT Strategic Framework (Federal Ministry of Health, 2016).

Another pertinent lesson that I learnt from my research project is to expect and prepare for a lengthy and cumbersome ethics review process after submitting a CBPR proposal to Research Ethics Review Committees in Nigeria, where it takes longer to obtain ethics approval clearance for CBPR than for quantitative research from my experience in the current research. This may be due to the fact that the institutional research ethics establishment in Nigeria has relatively more experience in reviewing 'conventional' research proposals compared to research proposals based on participatory approaches such as CBPR. However, this is a common problem generally encountered by researchers using CBPR approaches to conduct research; a review by Viswanathan et al. (2004) noted that it is relatively more difficult to obtain funding for CBPR compared to other research approaches even in higher

income countries. There are also fewer government and non-governmental organizations who provide funding for CBPR (Viswanathan et al. 2004).

8.3.2. Understanding community maternal health and related problems

One of the participatory approaches (auto-diagnosis method) was used to obtain a description and list of maternal and neonatal health problems as perceived by women's group members in the two study communities. These general descriptions and lists of health problems were further prioritised into a shortlist during the combined central participatory meeting; these lists are shown in Chapter 5 (Tables 5.1 and 5.2). A pertinent finding following these processes was the slightly different emphasis in the prioritised list of health problems as perceived by the women's group members from the two study communities. The list from Kayi community (peri-urban site) contained only maternal health problems which they perceived as their most important health problems. While the list of priority health problems from Tudun Kaba was a mixture of both maternal and neonatal health problems. This is maybe a reflection of what each community regards as particularly important to its members at that point in time, and this may change at another point in time. A number of studies (Ahari et al. 2012; Mosavel et al. 2005; Rosato et al. 2009) have used participatory approaches to conduct community health needs assessments with success, and its application during my research project further supports the usefulness of participatory research approaches as means for gaining insights into how communities perceive maternal and other health problems.

Another useful finding were the several suggestions by community members documented in the session notes of the female facilitators regarding the need for the inclusion of income generating activities (IGA) training for women's groups members as a strategy for improving maternal health. This is also reported in the literature, a review paper by Viswanathan et al. (2004) suggested that it could even have a stabilising effect on the group. I supported the adoption of income generating activities trainings across all the three selected communities

during the research project, and eventually it was the main *control* activity provided to the comparison community of Tsamawa.

Other findings arising at the end of the inception phase include, the selection of promotion of healthy diets, and knowledge of danger signs in mothers and newborns as the key issues to be addressed by the research project. In addition, participatory visual methods were selected as the preferred choice of useful and quick methods that will be helpful for conducting participatory learning activities by the non literate women's groups members in their communities. This finding provides additional evidence for the usefulness of participatory visual methods as effective methods for empowering non literate population as similarly reported by the WARMI project (Howard-Grabman, 1993).

8.4. Outline of findings and lessons learnt during the implementation phase

The socio-demographic characteristics of women's group members in both communities where they were established were similar (see in Chapter 5, details in Tables 5.1 and 5.2). A major input/strategy during the implementation phase was the deliberate strengthening of the capacity of women's group members as previously discussed in Chapter 5 and 6. This provided them with the legitimacy to engage in discussions on maternal health within their communities which have typically male dominated traditional systems. The inclusion of capacity building training and activities as part of supportive implementation activities was important because it provided group members with the necessary skill sets that further empowered them to conduct agreed tasks. This finding is supported by a study, (Loewenson et al. 2014 p.73), who stated that "a shift in power and control to the community, implies a level of organization and cohesion to co-initiate and assume control" (of the research process), and this can only be possible if organizational capacity building measures are put in place. The women's groups strengthening were achieved through building the groups'

capacity in group organizational skills, and basic financial empowerment through IGA training.

The inability of women's groups to adequately record and report group activities necessary for monitoring and evaluation purposes was due to their poor literacy backgrounds. This 'gap' was bridged by the use of basic smartphone cameras for the purpose of "reporting and record keeping" during the project, and these were easy for the non-literate women's group members to use successfully during the project. The use of phone technology also helped in greatly reducing project costs and promoted other ancillary maternal - newborn health activities in the community. This is in line with the finding noted in project reports (IDRC, n.d.) from Nigeria that mHealth or digital technologies can have a positive effect on health outcomes or services.

The women's group register of local maternal and newborn events was another capacity building initiative of the implementation phase. This register was used as a basic community level maternal and newborn health monitoring tool for tracking/monitoring maternal and newborn health events at community level in a participatory manner. Participating in the compilation of local statistics of maternal-neonatal health events served several purposes such as supporting the 'conscientization' process' (Freire, 1972), providing useful local community level statistics and was a useful group advocacy tool because the figures could be cited during discussions with local leaders and community members.

8.5. Overall findings and lessons learnt during the evaluation phase

The establishment of a local information system for collating stories of significant change by the research team was important because it provided a means of collecting and collating information needed to track the project implementation processes, understand local contexts and evaluate project findings. The system for collecting information was initially paper

based, but it was modified and transitioned after two and half months into the implementation phase to using mobile phone and a mobile phone messaging application (called Whatsapp) for recording audio files, sending stories and reports. This innovation was cheaper for the project to maintain and was easier for women's group members to use because most members had poor reading and writing skills. This further supports other findings in the literature regarding how mHealth or digital technology can be used to simplify activities and improve the health of people as highlighted in project reports from Nigeria (IDRC, n.d.).

8.5.1. Qualitative impact evaluation of the complex intervention

I conducted the qualitative impact evaluation of the research project using the MSC method as well as the second set of FGDs and KIIs conducted with peer-led women's groups, and other community members during the evaluation phase of the research project. During the evaluation, I deductively used the themes from the first set of FGDs and KIIs to frame the analysis of the second set of FGDs and KIIs. After this process, I noted that the derived themes from the second set of FGDs and KIIs were still generally aligned with the themes from the first set of FGDs and KIIs. In addition, the transcripts from the second set of FGDs and KIIs were further analysed and mapped deductively based on the critical health literacy domains described earlier (see in Chapter 7, Table 7.2). I did these so as to be able to detect changes if any, before and after the implementation of the complex intervention.

8.5.2. Outline of formative evaluation findings

The *fidelity of intervention delivery* was generally well achieved; achieving approximately 90-100% of the planned parameters with the exception of a few instances where some community *gatekeepers* could not be interviewed because of the absence of that category in a community. The *dose delivered* by the intervention was also largely achieved; all the planned peer-led women's group meetings were held in the peri-urban community, while about two thirds of the planned peer-led women's group meetings were held in the rural community. On

the other hand, the *dose received* by the participants during the facilitator-led women's groups meetings as well as the peer-led women's groups meetings was adequate as highlighted in the various project reports. The *reach* by the research project among the peer-led women's group during project implementation was wide. However, it was difficult to precisely estimate the reach of the research project in the respective study communities because the varied nature of the venues and learning opportunities (e.g. local festivities) which could not always be documented or predicted in advance. The reach of the peer-led women's groups intervention was most likely underestimated because from reports of group meetings, stories, FGDs and KIIs transcripts, there were several instances, informal venues or settings where learning sessions about danger signs and healthy nutrition were presented by members of women's groups other than at the monthly held community outreach sessions. The *recruitment* of women's group members into facilitator-led women's groups was done during the inception phase via open local invitation while recruitment of peer facilitators was via nominations (see Chapter 7 for additional details). To the best of my knowledge, there is no description or evaluation of any participatory women's groups study in the literature based on the Process Evaluation of Complex Interventions - MRC Guidance (Moore et al. 2015). This has limited my ability to compare my findings with such similar studies, however it is useful to use frameworks such as Steckler and Linnan's (Moore et al. 2010) to assess the impact of complex interventions.

8.5.3. Factors that facilitated research project implementation

The deliberate choice of women as facilitators for the women's group was culturally sensitive, and greatly helped in building trust and community acceptance. The CAB facilitated community entry, while the formation of women's groups promoted the participation of rural women in discussions regarding maternal and newborn health in their respective communities. In addition, the women's group interactions at group meetings,

discussions of local maternal health problems and feasible local solutions also helped further develop social capital within the group. Social capital has been described by Claridge, (2004, p.8) as "social relations that have productive benefits" to individuals, social group or communities. Nutbeam (1998, p.362) also described social capital as the processes between people which establish networks, norms and social trust, and facilitate coordination and cooperation for mutual benefit". A number of authors assert that social capital can be built over a short time because "any social interaction creates, or at least, changes social capital" (Claridge, 2004, p.16). Evidence from the literature suggests that CBPR and similar participatory approaches can help in building and supporting social relationships and networks that can build social capital within a relatively shorter time in communities, with attendant positive effects on the health of mothers and newborns in the community (Israel et al. 1998, p.178). However, the length of time it takes, and the degree to which these combinations of participation, empowerment and social capital contribute towards the conscientization and development of critical thinking skill of women's groups cannot be precisely estimated because it depends on a variety of contextual factors such as local culture, local resources and facilitation skills, personal characteristics of members of the women's groups. The experience of my research project and other studies (Howard-Grabman, 1993; Prost et al. 2013) that used the participatory women's group approach indicates that it is usually a slow, long (taking up to five years), (Prost et al. 2013) but rewarding process. The eventual outcome of these interactions include the development of critical health literacy capacity amongst women's groups who then have a sense of ownership of a locally relevantly intervention which they helped to develop and implement in response to their perceived local maternal health problems. This has the additional potential of relatively being more sustainable and more empowering to the local community where these women's groups are located. Critical health literacy as stated by Nutbeam (2000, p.265), "reflects the cognitive

and skills development outcomes which are oriented towards supporting effective social and political action, as well as individual action". Chinn (2011) has proposed domains of critical health literacy to include information appraisal, understanding the social determinants of health, and collective organising and action. These domains were very useful to me for tracking the changes in health literacy that occurred among the peer-led women's groups as they implemented the project's co-produced complex maternal health intervention. The importance of health literacy in promoting healthier outcomes is further supported by the Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development that was released after the 9th Global Conference on Health Promotion at Shanghai which states that "health literacy empowers and drives equity" and further "recognises health literacy as a critical determinant of health" (World Health Organization, 2016, p.2).

8.5.4. Barriers that threatened research project implementation

A number of factors affected the research project and they included the long time it took to obtain ethical clearance locally for the research partly because of local strikes by unions, as well as cynicism by some community members towards research by 'outsiders'. Community members were also busy with agricultural activities, and there was difficulty in traversing the terrain especially during rainy seasons. There was also a poor awareness of and attitude towards CBPR and qualitative research methods generally by the local medical and academic community, including the local research ethics committee. An important development which might help reverse the poor awareness and attitude towards adoption of CBPR and qualitative research methods in LMICs is the GRADE-CERQual (Confidence in Evidence from Reviews of Qualitative research) approach (Munthe-kaas et al. 2018) by the WHO which gives weight to evidence obtained from qualitative research. Additionally, I found using the CBPR method challenging because it required having trained and skilled facilitators with a high level of motivation.

8.6. Findings from the Comparison Community (Tsamawa)

The use of a comparison group when conducting CBPR is uncommon in the literature, this is partly because qualitative research methods are often used for analysing participatory research and contextual differences between communities regarding how participation takes place. Therefore attempts at making direct comparisons between two or more communities in this manner may just be difficult and unhelpful. However, general comparisons can be made regarding whether the presence or absence of a specific intervention such as a women's group impacted (or did not impact) on maternal health related discussions or activities in a community over time, or other major events occurred within the same group/community during the duration of the project that might have some influence on the project objectives. The comparison community may also help in providing insights into the potential impact, applicability or usefulness of how some of the lessons learnt (during implementation), for example the use phones for ancillary maternal health communications in both the study and comparison communities. In this regard, and to assess whether any changes occurred in these communities before and after the development of the women's group, the qualitative (thematic) data analysis of the first set of FGDs and KIIs used an inductive approach to obtain themes related to locally perceived maternal health problems and health literacy. Subsequently during the qualitative (thematic) data analysis of the second set of FGDs and KIIs, these same themes were used deductively in framing the analyses of the transcripts from the second set of FGDs and KIIs. In addition, three more themes based on the domains of critical health literacy (information appraisal, critical analysis of the SDOH and social action and organising) were also used to analyse the transcripts from the second set of FGDs and KIIs as a means of tracking and detecting whether any changes had occurred within and between the study and comparison communities.

The findings from the comparison community revealed no discussions or actions related to maternal health or health literacy which supports the findings that women's groups might be influential in driving local discussions and activities regarding maternal and neonatal health as suggested by (Morrison et al. 2005; Morrison et al. 2010). In addition, there were some recurring appeals from community members in the comparison community for the establishment of a local women's group devoted to maternal health. This is another reflection of the difficulty most vulnerable communities have in initiating action despite having some understanding of their problems.

There were some comments about the IGA trainings conducted in both the comparison community and study communities in the transcripts of the second set of FGDs and KIIs conducted during the evaluation phase in all the communities. This interest in IGA trainings may be reflective of the general poverty and social deprivation faced by both the study and comparison communities, because areas with poor social conditions are usually sensitive and responsive to financial empowerment initiatives as observed by studies (Gibbons, 1987 ; Saha, 2014).

8.7. My reflexivity and positionality during the research

I am a male medical doctor and public health specialist from a Hausa-Islamic background and currently live and work in this Hausa-Islamic social context. However, I received formal western education to become a medical doctor and public health specialist.

I bring to my research a perspective coloured by the dominant positivist biomedical conceptualization of the causes and effects of maternal and newborn ill health. My perspective is also influenced by my upbringing as a male within the Hausa-Islamic setting which is dominated by patriarchy, gender, religious, cultural and power influences. It is also possible that my interpretation of the findings from the research project might have been

different if I was a woman. However, the methods used during the research project (such as deploying female facilitators, using participatory research methods) sought to minimise these influences. The strategy of using female facilitators to support and interact directly with the women's groups greatly reduced the influence of my positionality, personal and subtle cultural perspectives that I might have affected or impacted on the responses of the women's group members at any stage the research project.

At the onset of my career in public health after graduating from medical school, my interest in the social sciences/sociological approaches to health was aroused when several years ago, I attended the Masters (MSc) in Community Eye Health at the University of London and the MSc Epidemiology course at the London School of Hygiene and Tropical Medicine respectively. During my MSc dissertations, I worked with school teachers in Nigeria to screen pupils with visual impairment, and also designed a study protocol for supporting patients with aphakia (uncorrected vision after cataract lens removal). In addition, during my postgraduate medical fellowship examination, I trained school teachers to provide HIV/AIDS Health Education for Secondary School students in Nigeria. All these experiences influenced my career choice to become a lecturer in social medicine at Bayero University Kano as well as my decision to embark on the PhD programme at ScHARR. These opportunities also opened my eyes to how power relations, gender and other social factors can give rise to maternal and newborn health inequities especially in the settings where I work in Northern Nigeria. These experiences also brought me into contact with literature on health literacy, health promotion and participatory research.

I constantly strived to apply the principle of reflexivity while conducting and reporting on the research process during the research project. Reflexivity means “thinking critically about what you are doing and why, confronting and often challenging your own assumptions, and recognizing the extent to which your thoughts, actions and decisions shape how you research

and what you see” (Mason, 2002, p.5). Reflexivity also implies thinking constantly and critically about what the data we are collecting is telling us about the phenomena that we are observing (Mason, 2006). I largely achieved this by interjecting my views, comments and observations throughout the body of this thesis.

During the research project, I held regular monthly meetings with female facilitators, and with women's group members. We debriefed ourselves after every field visit and had regular phone call access to each other throughout the research project. The facilitators in the research team were all women, and from a non-medical background (three female facilitators and one female Hausa translator). I also put in place measures to minimise the impact of my positionality on the research process; such as the utilization of different combinations of participatory research approaches that places control and power in the hands of the co-researchers. The use of participatory approaches puts some decision making responsibility in the hands of the participants as well as achieving some transfer of power to them while acknowledging the importance or relevance of indigenous knowledge in the study communities.

Other power imbalances/tensions between myself (the researcher from academia) and the local community or women's group members largely did not arise because of how I used participatory research approaches during the research project. The strength of the participatory research approaches is based on the fact that these approaches minimise and are aware of how unequal power relationships can hinder participation by marginalised populations. The variety of ways that I used the participatory research approaches to minimise the relational power imbalance between myself and the community members include using the auto-diagnosis method to understand the local maternal and newborn health problems as perceived by the women's group members with the support of the female

facilitators, the recruitment of female facilitators and selection of study communities carried out by the CAB with my support.

I also accommodated preferences by local traditional rulers regarding venues for community meetings on two occasions to allow for building of a trusting relationship, although such requests were few and did not affect women's group activities. I strived as much as possible to ensure that decisions regarding the project implementation were discussed within the research team and women's groups in a democratic manner that promoted inclusion and equity by giving more weight to the preferences of women's group members.

I also ensured that I held wide consultations with and sought permission from community elders and the CAB before taking major decisions related to the project. For example, I obtained the permission of community elders before inviting the women's group members for the central combined participatory planning workshops that took place at a different site outside the study communities as well as in the use of female facilitators who constantly interacted with the women's group members.

However, my background as a medical doctor enabled me to see the fit between the list of local health problems of mothers and newborns generated by women's group members during the auto-diagnosis session with maternal and neonatal danger signs; my medical background also affected my support for the women's groups' choice of danger signs and healthy diets as priorities. In addition, my background in public health also helped me in supporting the research project planning and execution. I currently work in a tertiary level academic institution called Bayero University which is located in Kano, Northern Nigeria. Bayero University is surrounded by poor and deprived communities with high levels of maternal and neonatal deaths, and their poor health indices further influenced my selection of CBPR as the

appropriate participatory research approach to use in addressing their maternal and neonatal health problems in a sustainable, effective, empowering and responsible manner.

8.7. Connecting some of the concepts used in the research project

My research project has shown that it is feasible to build the capacity of women's group members to a stage where they are able to transit from a facilitator-led women's group to a peer-led women's group with the demonstrated ability to implement and conduct a community tailored complex health intervention. The data from the analysis of the stories of significant change as well as the FGDs and KIIs (see Chapter 7) highlights the empowerment process that is implicit within the critical health literacy level (Nutbeam, 2000).

The major challenge with the approach of using participatory approaches to build up critical health literacy amongst marginalised populations is that it requires committed and sustained efforts, takes longer to achieve, and the effects may challenge the local status quo. Some other challenges which might arise include difference in power between the co-researchers and some of the facilitators (research team members) as well as issues related to co-positionality. For example, I was faced with the inability to co-analyse the qualitative data from the KIIs and FGDs together with the women's group members partly because of their inability to read and write.

A possible explanation for the achievements of the women's group members based on the findings of this research project is that the women's group members become empowered as a result of their participation in the group discussions and activities on maternal and neonatal health to the extent that they get involved in working within their resources and cultural constraints to take action. They are then able, despite their low educational attainment, to change their health status and subsequently influence that of their fellow community members. This is partly supported by the findings from the scoping review on participatory

women's groups where three out of the seven qualitative studies conducted on participatory women's group reported similar impacts and mechanisms (Morrison et al. 2005; Morrison et al. 2010; Rath et al. 2010).

Improvements in general (maternal) literacy and its proxy educational attainment or status, has been linked to better health outcomes and reduction in mortality and morbidity as documented in the literature (Caldwell & McDonald, 1982; LeVine et al. 2004 ;Babalola & Fatusi, 2009). The mechanism through which general literacy may affect maternal health outcomes have been attributed to several factors including empowerment, delay in getting married, delay in childbearing, and increased capacity to understand the SDOH (Caldwell and McDonald, 1982; LeVine et al. 2004; Babalola and Fatusi, 2009). On average, it takes several years and significant resources for a child to attain a primary, secondary or tertiary level education (Federal Ministry of Education/NERDC, 2004), however the positive impact of schooling on the health indices of a society tends to be comprehensive and multi-generational.

On the other hand, improvements in health literacy has also being linked to better health outcomes (Williams et al. 1998; Mojuyinlola, 2011), and potential mechanisms have been suggested (Morrison et al. 2005; Morrison et al. 2010) through which increased health literacy may mediate these effects. Other proposed mechanisms include better understanding of the SDOH, empowerment, increased health awareness, increased uptake of health information and services (Mogford et al. 2010). The findings from my research project show that participatory approaches improved the ability of non-literate women's groups to improve their social skills and personal capacity to "access, understand, appraise and use health information to make decisions about health" (Dodson et al. 2015). There is a link between participation and empowerment, and as stated by Claridge (2004, p. 21) "participation and empowerment are inseparably linked, they are different but they depend on each other to give

meaning and purpose". Participation implies action, or being part of an action such as a decision-making process while empowerment signifies gaining control, including having the entitlement or ability to participate and influence decisions (Lyons et al. 2001). The two participatory research approaches used during my research project relied on experiential and adult learning techniques to initiate the conscientization process well as develop the ability of women's groups to critically analyse the SDOH in their lives. This partnership between the research team and women's group leveraged on their local lived experiences within their cultural milieu to stimulate and promote this conscientization process. The act of involving the women's groups in deciding what was important about local maternal health problems and the possible explanations or causes of these problems promoted their conscientization (Freire Institute, 1968) as well as development of critical thinking skills. Conscientization is described as the "process of developing a critical awareness of one's social reality through reflection and action; and action is fundamental because it is the process of changing the reality [of mothers and newborns] in the communities within which these women live" (Freire Institute, 2018, para.4).

The critical health literacy skills of the women's groups improved during the research project across the three domains proposed by Chinn et al. (2019), for example by the end of the implementation phase they had increased awareness/knowledge of danger signs among mothers and newborns and were able to detect such danger signs among community members, increased self confidence/assertiveness by group members for example in referring or escorting community members to local health facilities, increased capacity in supporting each other and mobilising local resources for maternal and newborn health) (see Table 7.1, Chapter 7).

Another explanation for the role played by participation as a means of promoting empowerment is that participation "engages the (community) in actively examining the

reasons for and consequences from either formal or informal activities of investigation through discussion, whereby needs are identified, decisions are made, and mechanisms are established to improve community life, services, and/or resources" (Viswanathan et al. 2004, p.23). Accordingly, it has been proposed that the women's group processes "gradually move the group through different modes of participation", from the lowest level to the highest level of participation (Viswanathan et al. 2004, p.23). The participatory women's group has also been reported to be a "social intervention (which) harnessed the creativity and self-organising activities of poor women" (Barnett et al. 2005, p.1170).

The participatory approaches are also very adept at using a wide range of media so as to be intentionally inclusive of marginalised groups, communities or populations. The link between the use of arts-based methods in promoting better health has been documented by previous studies (Kilroy et al. 2007; Lawthom et al. 2012). These approaches recognise how art (including local traditional art forms, participatory visual methods, the creative or performing arts) can be a powerful and empowering means for engaging and mobilising communities to reflect and decide on social issues that need to change. They are also used to reflect on and critically manage these social change processes so as to achieve desired health goals and objectives (such as improved maternal health literacy and maternal health). Eventually, through these shared feelings, thoughts and behaviours, the community becomes aware of the possibilities for positive change.

8.8. Reflections on the implications of the use of the CBPR approach in the context of existing evidence and established practices

The findings from the inception phase of my research project regarding the usefulness of setting up a CAB or working with an existing CAB alongside the research team reinforces this recommended CBPR best practice. A CBPR project in Beirut reported the importance of establishing an effective research team that is complemented by a Community Advisory

Committee (Kobeissi et al. 2011). The CAB in my research project greatly facilitated gaining permission from local leaders as well as in obtaining the trust of community members themselves. This was similarly reported in another CBPR study which highlighted the role of the CAB in ensuring community participation at all stages of the research (Ahari et al. 2012). The CAB helped in obtaining permission expeditiously from the traditional rulers at all levels and gaining entry into the communities despite their patriarchal nature.

The CBPR approach is amenable to either quantitative or qualitative research methods and analysis or even a combination of both depending on what are the research objectives. I predominantly used qualitative research methods in my research project because I wanted to obtain detailed information about the contextual and complex health literacy and group empowerment processes that I was aiming to influence during the research project. In addition, it was an opportunity to provide qualitative research evidence regarding CBPR in Nigeria, because there is a dearth of CBPR studies in Nigeria, especially those that predominantly utilised qualitative research methods.

Ensuring that participation takes place in research decision making, planning and design (practice) is difficult in practice and faces some obstacles which maybe structural (emanating from the political environment), administrative (usually bureaucratic) and social (arising from cultural dependence on experts/leaders for decisions, lack of experience or formal training in research or inadequate time) (Oakley 1991 as cited in Gregory, 2000, p.184). I was largely able to overcome the structural and administrative obstacles to participation by using the CAB during the CBPR.

The other obstacles encountered in my research were largely related to lack of formal training or experience in directly conducting qualitative data analysis by the women's group members. In practice, I mostly conducted the qualitative data analysis myself but in consultation with

the women's groups members and female facilitators, and their feedback influenced the analysis. The other obstacles such as limited financial resources, poor health decision making skills, knowledge of maternal and new born health problems, participatory research skills amongst the women's group members were addressed and strengthened during the auto-diagnosis sessions and peer-led participatory learning sessions.

8.9. Reflections on the implications of the participatory needs assessment (Auto-diagnosis) approach in the context of existing evidence and practices

The facilitator-led women's groups that were established during the inception phase of the research project carried out a series of auto-diagnosis sessions. One of the outputs from these sessions generated a list of locally important maternal and neonatal illnesses as perceived by women's group members. This information was subsequently useful for prioritising local maternal and neonatal illnesses to be targeted when designing a tailored maternal health literacy intervention based on the felt needs of the women's group. The advantages of obtaining local felt maternal and neonatal health needs includes better acceptance/uptake of any intervention that is designed based on these felt health needs. This approach of using auto-diagnosis sessions initially to obtain local maternal and neonatal health needs before designing a tailored intervention is contrasted with the more common approach of assigning medically defined (normative) maternal health interventions as prescribed by maternal health experts.

The findings from the auto-diagnosis sessions reinforce the findings from studies conducted with women's group in Malawi by Rosato et al. (2006) and Rosato et al. (2009). The women's groups in Malawi were able to generate a list of local maternal and neonatal health needs/problems. My findings also agreed with one of the studies that assessed how women's groups perceived and prioritised neonatal health problems, local women's groups "do not define the neonatal period according to any epidemiological definition" Rosato et al. (2009,

p.168). The women's groups in my research project also do not describe some clinical maternal health problems as a "coherent concept of illness in their community but rather as disparate symptoms" (Rosato et al. 2006, p.1186). The findings from the KIIs conducted during the inception phase also supported the assertion that community members perceived and prioritised maternal health problems as severe if they thought it could lead to death (Rosato et al. 2006).

8.10. Reflections on the choice of qualitative research methods

My decision to use predominantly qualitative research methods was informed by the literature which suggested a better fit between qualitative research methods and the transformative research paradigm adopted for this thesis. The "(transformative) paradigm views research as a 'moral and political activity' that requires the researcher to commit to a value position of being a co-learner, co-participant and co-researcher" (Chilisa, 2015). The transformative paradigm is the explicitly adopted research paradigm that was used in this research project and is also the bases for all the participatory research methods used, such as CBPR, auto-diagnosis, participatory women's group approach and MSC method. Another reason for using qualitative research methods is to explain and investigate the complex social processes involved in addressing my research question. This kind of research question is best answered using qualitative research methods that seek to understand social and behavioural contexts and processes that are not always known or clear (Bradley et al. 2007).

A wide range of qualitative research methods have been used when conducting participatory research with women's groups. The types of qualitative research methods that have been used include 1. participant observation and analysis of reports as reported in Morrison et al. (2005), 2. FGDs as reported by Borghi et al. (2007), 3. semi-structured interviews, group interviews, FGDs, unstructured observation of groups and photo-elicitation methods by Morrison et al. (2010), 4. analysis of project and intervention documents, structured

discussions with group members and non-group members, observations during group meetings as reported by Rath et al. (2010), 5. FGDs and interviews by Rosato et al. (2006), and 6. description of project documents by (Rosato et al. 2010). However, I mainly used group discussions, analysis of reports/project documents, FGDs, KIIs, stories at different stages of my research project, and my experience with these methods reinforce the assertions about their usefulness in the previously cited researches.

8.11. Reflections on some of the findings obtained from qualitative research

The findings from the KIIs with different maternal health stakeholders or gatekeepers at community level support the observation from a study on therapeutic landscape conducted in Guinea that there are more actors in the therapeutic landscape of Guinea than the erstwhile concept of just two categories of public and private healthcare providers. The contemporary categories are more varied than the previously proposed categories of traditional versus biomedical (which can be government and private sector dominated health care providers) (Bloom et al. 2008). All these groups need to be addressed when planning or designing maternal health interventions. There were a variety of local traditional healers such as TBAs, local barbers, Imams that provide care for mothers and newborns in the communities where the research project was conducted and this is in keeping with the findings from Guinea (Bloom et al. 2008).

Another finding from the KIIs and FGDs indicated prevailing influences regarding a divine or spiritual basis for maternal and neonatal illnesses in all the communities. These belief systems have a strong influence on health-seeking behaviour and contribute to delay in seeking care which can be fatal for maternal or neonatal health conditions. These findings are similar to those in another paper where maternal ill health and cure/treatments are attributed to divine forces which is a pointer to the powerful hold that local belief systems have over the lives of community members (Hall, 1988). However from my research project, this kind of

influence was found contemporarily to be generally waning in a secular trend, and the current belief pattern is a mixed picture consisting of belief in both orthodox medicines as well as spiritual causes of illnesses.

8.12. Reflections on some of the findings obtained from the participatory planning meetings

The main project implementation activities that were agreed upon during the participatory planning meetings were transition to peer-led participatory women's group meetings, conducting peer-led participatory learning sessions using participatory visual methods on healthy diet, and knowledge of maternal and newborn danger signs. These are broadly similar but innovatively modified versions of the participatory learning and action (PLA) activities carried by women's groups in previously reported studies (Prost et al. 2013). However, the supportive project implementation activities which were also planned and agreed upon to strengthen the women's groups to carry out the main implementation activities have not been reported by any other primary research carried out using the participatory women's group approach even though it has the potential to considerably strengthen the ability of women's groups to be sustainable (Sondaal et al. 2018).

The outputs/strategies arising from the planning meetings conducted during the inception phase of the research project were aimed at the deliberate strengthening of the personal, psychological as well as the organizational capacity of women's groups members, and these are recommended empowerment strategies. In further support for this, a World Bank report has noted that attention should be given to enhancing the capability of individuals and groups using participatory training during empowerment processes (Narayan, 2005).

This strategy of strengthening the women's group was further achieved by deliberately restricting the size of the women's group so that optimal group dynamics was easier to

maintain (Howard-Grabman 1993). Otherwise, a large group may become unwieldy, difficult to facilitate or more prone to having difficulties in arriving at a consensus on group decisions.

8.13. Reflections on key features and the value of peer-led participatory approaches in the context of this project

The effectiveness of the participatory women's groups intervention on maternal and neonatal health outcomes has been established by several studies within the literature (Howard-Grabman, 1993; Prost et al. 2013), although the finding from More et al. (2012) suggests that the women's groups intervention may work better and shows more impact in rural communities than in urban communities. This maybe because of factors such as the relatively better cohesive nature of rural communities, their stable/non transient nature, lack of access to healthcare and health facilities, and high burden of maternal and newborn mortality. Women's groups can potentially help provide enlightenment on key maternal and newborn problems, create demand for maternal and newborn services and promote empowerment in a cost effective and sustainable fashion as shown in studies (Sinha et al. 2017; Prost et al. 2013). However, all the studies that used the participatory women's groups intervention had women's groups that were led by a trained facilitator and none was led by a peer facilitator. For my thesis, I designed the research project so that the women's group members eventually get empowered to lead the process (that is become peer facilitators) in the spirit of co-positionality, empowerment and sustainability as espoused in CBPR. A comment by a women's group member which was extracted from the monthly group meeting reports, exemplifies the feeling of improved status experienced locally by one the peer-led women's group members in her community - she explained that it was an empowering experience for her to participate in the peer led activities because it gave her *knowledge and respect in the eyes of the community*.

8.14. Reflections on the use and value of the MSC method

The findings from the evaluation phase indicate that the MSC method (Davies and Dart, 2005), is useful for evaluating the impact of participating in women's groups activities (a complex health intervention) through the collection of stories of significant change. This method is suitable for evaluating the effects of research conducted in rural and peri-urban communities with low educational attainment statuses but with strong oral traditions typical of LMICs. However, the MSC method needs a robust system for collating the stories of significant change that are to be analysed by this method. A strength of the MSC method is that it can be used for evaluating any changes that may occur during participatory research processes. My experience of using the MSC method to evaluate the qualitative impact of participating in the research project by the women's groups supports the claims of its utility by other authors (Sango & Dube, 2014).

8.15. Outline of the original contribution to the field represented by this project

My thesis assessed the feasibility, acceptability and effectiveness of using a blend of participatory methods to improve the critical health literacy of women's groups members. These methods have important contributions to make towards providing scientific, sustainable and equitable approaches that can save the lives of mothers and newborns particularly in LMICs. Some potential mechanisms through which these mix of action research oriented methods may work to improve maternal health include conscientizing and empowering women's groups members as well as promoting social capital in the groups and their communities.

There is a wealth of CBPR experience from studies using participatory methods, especially in high income countries settings and populations but very few have been conducted in Nigeria. My research project was unique in adapting participatory research methods and

related concepts to implement a practical programme that used women's groups to promote health literacy in rural and peri-urban communities in Northern Nigeria.

I was influenced by an empowerment and participation perspective in my research, and this led me to innovatively use a mix of participatory research approaches that enabled me to achieve these objectives. During the research project, I co-designed and co-implemented a complex maternal health intervention which helped in empowering women's group members to lead health literacy activities by themselves in their communities that addressed local felt health problems.

Additionally, participatory planning meetings were used for discussing, refining and achieving consensus between the research team and all the women's groups members regarding the planning, logistics, content and timing of all peer-led participatory learning sessions with the use of participatory visual methods and peer-led participatory women's group meetings that were conducted during the implementation phase. This was also an innovation because experience from the health promotion field suggests that effective interventions may still fail if sufficient attention is not given to programme planning. The participatory planning meetings further provided an opportunity for the women's group to participate in planning the practical logistics involved in conducting peer-led women's group meetings and activities on a long term and sustainable basis.

My thesis has also showed how participatory women's groups can be adapted as an approach for improving maternal and newborn health as this intervention is being scaled up in different settings around the world.

To outline the major original contributions of my thesis:

i) The transition from facilitator led to a peer-led participatory women's group was a planned and deliberate innovation that was implemented and evaluated during the research project. To the best of my knowledge, it has not been done before. The implication of proving the feasibility or effectiveness of this innovation has potential in translational research, (Viswanathan et al. 2004) as well as for improving the scale up or sustainability of participatory women's group approach for improving maternal and newborn health especially in resource constrained settings like Northern Nigeria. I succeeded in working with women's groups to co-produce this complex maternal health intervention which is the objective of a CBPR project.

ii) The effective use of largely qualitative research methods to design, refine and evaluate a complex maternal health intervention supports the pragmatic use of these methods in similar settings. These findings can contribute to providing the evidence to inform discussions by major bodies such as the World Health Organization towards strengthening the use of evidence from qualitative research to inform decision making in relation to health and social interventions (Lewin et al. 2015).

iii) The deliberate addition of group building and strengthening activities during the research project so as to promote sustainability of the women's group is one of the major adaptations of this research project. Sustainability remains “a profound challenge to the institutionalization of innovation without continued research infrastructure funding” (Braun et al. 2012, p.1201).

iv) The use of a variety of participatory research methods to conduct the research project is another original contribution to the field because the combination of this range of complementary methods has not being documented anywhere in the literature to the best of my knowledge.

v) The design, implementation and evaluation of a complex health literacy intervention comprising of peer-led participatory learning sessions with participatory visual methods (on the topic of maternal and neonatal danger signs and promotion of healthy nutrition) is also an innovation that has added new information to the field.

8.16. Strengths and limitations of this study

8.16.1. Strengths

My thesis set out to assess whether an action research approach that utilised a mix of participatory research methods can be used to co-design, co-implement and evaluate an intervention to improve health literacy amongst local women in rural/peri-urban Northern Nigeria whilst working together with them in their communities. A major strength of my thesis is that these objectives have been largely achieved at the level of the women's groups themselves as supported by the findings of the formative evaluation and qualitative impact evaluation that was conducted as part of the research project. Another strength is that the qualitative research methods used in the research project proved to be well suited for assessing the participatory research approaches. In addition, qualitative research methods proved to be very useful for describing perceived maternal and neonatal health problems of the communities that were studied, as well as their local contexts and experiences.

8.16.2. Limitations

A major weakness which is important to note is that my research project was not done on a scale that was large enough and did not last long enough to be able to show noticeable impact on maternal and neonatal mortality or morbidity within the period of implementation. This is mainly due to limited time and funding resources. It is also important to note that sufficient evidence regarding the effectiveness of participatory women's groups in reducing maternal and neonatal mortality has already been provided elsewhere in the literature (Prost et al.

2013). However, my thesis can still be regarded as a 'proof of concept' of a sustainable adaptation that can work in Northern Nigeria given enough time, resources and research.

A major limitation of participatory approaches which directly limits their generalizability is that they can be "context sensitive" (Sherington, 1997, p.195) and I cannot therefore advocate direct replication. However, the findings from my research project suggest that some transferable key features such as engaging with local trusted institutions, creating platforms for understanding/identifying community needs, creativity/flexibility in working with women groups, adapting new technologies in simple ways and entrusting some responsibilities to community members may have enduring and cross cutting usefulness for all maternal and newborn health and development projects as they work towards improving maternal and newborn health in LMICs.

8.17. Implications for policy makers

The applications of CBPR findings may be for theory development, to influence the development of maternal health interventions and for maternal health policy advocacy (Viswanathan et al. 2004, p.29). The following are suggested policy implications for public health :

The process of using participatory methods to improve critical health literacy can promote participation and inclusion of illiterate or marginalised populations as shown by my project. These methods can be equally feasible, acceptable and effective, and all these are major advantages for improving public health especially in communities that live in rural areas as well as other marginalised/vulnerable populations. These populations tend to benefit best from participatory research approaches because they boost social capital and inclusion through participation particularly where little or nothing had previously existed.

The use of participatory methods to improve critical health literacy has advantages over the use of functional health literacy materials/resources, such as pamphlets or leaflets which are mainly useful among people that can understand, read and write in English. There is already some guidance produced recently by the WHO on the use of participatory women's groups for improving maternal health in LMICs (World Health Organisation, 2014) but this has not been adopted in Nigeria to the best of my knowledge. The Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development that was released at the 9th Global Conference on Health Promotion at Shanghai states that "health literacy empowers and drives equity" and "recognises health literacy as a critical determinant of health" (World Health Organization, 2016).

The public health implication is that the peer-led women's group approach can be useful in raising maternal awareness and uptake, thus boosting demand for health services. Other secondary benefits include the women's groups becoming local advocates for maternal and other development issues.

The main public health policy implication of my thesis findings is for a stipulation to be made that, the development of a peer-led women's group approach be included alongside other technical obstetric interventions/services within maternal and newborn packages. Therefore, the use of the peer-led participatory women's groups should be part of the standard policy recommendation for implementing maternal - newborn health services programming especially in LMICs.

8.18. Implications for public health/maternal/neonatal health practitioners

i) The peer-led women's group can be used for complementing demand creation and awareness raising for maternal health services particularly among illiterate communities in under-served/ rural communities. The participatory women's groups intervention can

complement or be part of health worker led interventions especially in rural settings although it should be noted that the effect of participatory women's groups intervention may not be as effective in settings where there is little or poor improvements in health service access and quality as is the case in slums within cities of LMICs.

ii) Awareness of local beliefs

One of the findings from the KIIs and FGDs indicated that local belief systems about causes of maternal and neonatal illnesses are still rooted in divine predestination and spiritual influences in local communities of Northern Nigeria. Public health practitioners should therefore take into account local beliefs during delivery of maternal and new born health services in LMIC settings.

8.19. Implications for further research

a) Need for further qualitative or mixed methods research

Quantitative studies that looked at the implemented participatory women's groups intervention, provide limited explanations for why the participatory women's groups intervention worked. It was therefore important to use qualitative research methods to help towards further understanding how peer-led women's groups work as well as the strengths and limitations of this approach, with a view to harnessing its full potential for accelerated health and social development so as to achieve sustainable health and development for mothers and newborns around the world. My thesis largely focussed on using qualitative research methods to study the feasibility, acceptability and effectiveness of participatory research approaches in improving health literacy of women's groups, however I did not deeply investigate the underlying cultural factors that influence maternal and newborn health at community level. These can further be investigated using qualitative or mixed methods research in subsequent studies.

b) Understanding the role of local gatekeepers:

One of the findings from the inception phase KIIs and FGDs indicate that there are different maternal health "gatekeepers" (e.g. TBAs, Imams, local barbers) who play important roles in influencing maternal health in their local communities in Northern Nigeria. Further research is needed to understand their roles and contributions to maternal and neonatal health.

c) Understanding the role of local belief systems:

Another finding from the KIIs and FGDs indicate that local belief systems about causes of maternal and neonatal illnesses are still rooted in divine predestination and spiritual influences in Northern Nigeria. Further implementation research on how to engage with religious leaders, traditional rulers and communities to modify their health care seeking behaviour need to be conducted in that setting.

8.20. Conclusion

In summary, this research project employed participatory research methods, health literacy intervention, health psychology as well as project planning and evaluation concepts to inform the design of a complex maternal health intervention to improve maternal and neonatal health of women's groups living in rural and peri-urban communities of Northern Nigeria. This research project promoted social capital, improved health literacy and empowered women's groups to lead maternal and newborn health promotion activities in their communities in an effective, acceptable and feasible manner during the research project.

The improvements in health literacy of women's groups following their participation in the CBPR process during the research project strongly indicate that maternal and newborn health can be improved in LMICs even in the midst of pervasive illiteracy and other structural

challenges. This can be done through promotion of community participation, as well as the empowerment and improvement of the health literacy of women's group members without prejudice to advocating for improved girl child education.

The findings and lessons from the research project also suggests that the use of participatory approaches to improve maternal health literacy is a viable and feasible option for improving maternal and newborn health in Northern Nigeria as well as in similarly resource constrained or vulnerable communities.

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Appendices

Appendix I - Definitions of health literacy

Table 1: Health literacy definitions adapted from (Berkman et al. 2010).

S/N	Definition	Source
	Individual static - definitions	
	The constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment, such as the ability to read and comprehend prescription bottles, appointment slips, and other essential health-related materials.	AMA Ad Hoc Committee on Health Literacy (1999)
	The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.	Ratzan and Parker (2000), in Institute of Medicine (2004) and Healthy People 2010, UDHHS (2000)
	The capacity of individuals to obtain, process, and understand the basic information and services needed to make appropriate health decisions. Lee et al. (2004) note that moderators of health literacy include disease and self-care knowledge, health risk behavior, preventive health, and physician visits, and compliance with medications. Social support is a moderator for the relationship of health literacy with health status and health service use.	Selden, Zorn, Ratzan and Parker (2000) in Lee, Arozullah and Cho (2004)

S/N	Definition	Source
	The cognitive and social skills that determine the motivation and ability of individuals to gain access to, understand, and use information in ways that promote and maintain good health. Ratzan (2001) conceptualizes health literacy as a framework for health promotion activities and a link between knowledge and practice.	Nutbeam (2000) in Ratzan (2001)
	Personal, cognitive, and social skills that determine the ability of individuals to gain access to, understand, and use information to promote and maintain good health. These include such outcomes as improved knowledge and understanding of health determinants, and changed attitudes and motivations in relation to health behavior, as well as improved self-sufficiency in relation to defined tasks. Typically these are outcomes related to health education activities. Health literacy is conceptualized as one domain in a conceptual model of health promotion.	Nutbeam (2006)
	An individual-level construct composed of a combination of attributes that can explain and predict one's ability to access, understand, and apply health information in a manner necessary to successfully function in daily life and within the health care system. Functional health literacy: the skills and ability to successfully function and successfully complete health related tasks. Individual-level attributes include abilities in prose, document, and quantitative literacy; ability to engage in two-way communication; skills in media literacy and computer literacy; motivation to receive health information; and freedom from impairments and/or communicative assistance from others.	Bernhardt, Brownfield, and Parker (2005) in Schwartzberg et al. (Eds.)
	Health numeracy is the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, bio-statistic, and probabilistic health information needed to make effective health decisions. Health numeracy is considered to be not simply about understanding (processing and interpreting), but also about functioning (communicating and acting) on numeric concepts in terms of health.	Goldbeck, Ahlers-Schmidt, Paschal and Dismuke (2005)
	The degree to which individuals can obtain, process, understand, and communicate	McCormack (personal communication, 2010)

S/N	Definition	Source
	about health-related information needed to make informed health decisions.	
	Individual dynamic - definitions	
	The wide range of skills and competencies that people develop to seek out, comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life.	Zarcadoolas (2005)
	Health literacy varies by context and setting and is not necessarily related to years of education or general reading ability.	The National Network of Libraries of Medicine (2009)
	Individual system definition	
	The ability to function in the health care environment and depends on characteristics of both the individual and the health care system. An individual's health literacy is context specific (dynamic) and may vary depending upon the medical problem being treated, the health care provider, and the system providing care. The definition includes health knowledge.	Baker (2006)
	Dependent on individual and system factors, including communication skills of lay persons and professionals, lay and professional knowledge of health topics, culture, the demands of the healthcare and public health systems, and the demands of the situation/context.	Healthy People 2010
	Public health definition	
	Public health literacy is the degree to which individuals and groups can obtain, process, understand, evaluate, and act upon information needed to make public health decisions that benefit the community.	Freedman, Bess, Tucker et al. (2009)

S/N	Definition	Source
	Health literacy is linked to literacy and entails people's knowledge, motivation, and competence to access, understand, appraise and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention, and health promotion to maintain or improve quality of life during the life course	Sørensen et al.(2012, p. 3).

Appendix II - Supplementary tables & figure from scoping review

Table 1: Search terms used during scoping review

Serial Number	Terms
1	"women's group" or "mother's group" or "female group" or "girl group" or "support group"
2	and "maternal health" or "mother's health" or "women's health" or "girl's health" or "reproductive health"
3	And "newborn health" or "neonatal health" or "child health" or "infant health"

Figure 1 : The PRISMA flow diagram of the scoping review

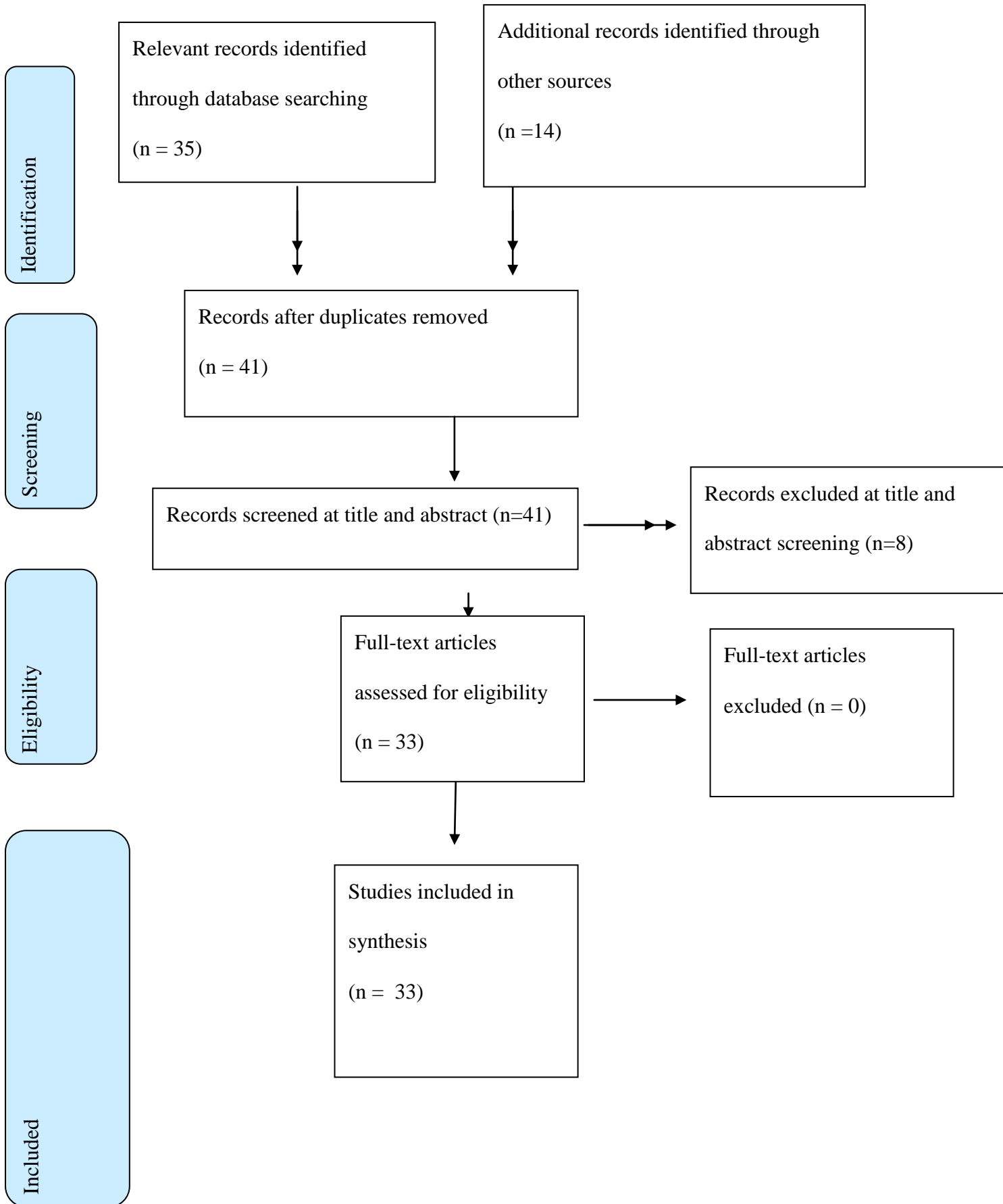


Table 2 : List of studies/articles included in the scoping review

Name of Authors	Name of Country	Title of included study
Dharma S Manandhar, David Osrin, Bhim Prasad Shrestha, Natasha Mesko, Joanna Morrison, Kirti Man Tambahangphe, Suresh Tamang, Sushma Thapa, Dej Shrestha, Bidur Thapa, Jyoti Raj Shrestha, Angie Wade, Josephine Borghi, Hilary Standing, Madan Manandhar, Anthony M de L Costello.	Nepal	Effect of a participatory intervention with women's groups on birth outcomes in Nepal: cluster-randomised controlled trial. <i>Lancet</i> 2004; 364: 970–79
Josephine Borghi, Bidur Thapa, David Osrin, Stephen Jan, Joanna Morrison, Suresh Tamang, Bhim Prasad Shrestha, Angie Wade, Dharma S Manandhar, Anthony M de L Costello.	Nepal	Economic assessment of a women's group intervention to improve birth outcomes in rural Nepal. <i>Lancet</i> 2005; 366: 1882–84
Joanna Morrison, Suresh Tamang, Natasha Mesko, David Osrin, Bhim Shrestha, Madan Manandhar, Dharma Manandhar, Hilary Standing, Anthony Costello.	Nepal	Women's health groups to improve perinatal care in rural Nepal. <i>BMC Pregnancy and Childbirth</i> 2005, 5:6.
Angie Wade, David Osrin, Bhim Prasad Shrestha, Aman Sen, Joanna Morrison, Kirti Man Tambahangphe, Dharma S Manandhar, Anthony M de L Costello.	Nepal	Behaviour change in perinatal care practices among rural women exposed to a women's group intervention in Nepal. <i>BMC Pregnancy and Childbirth</i> 2006, 6:20.
Josephine Borghi, Daya L. Shrestha, Deepa Shrestha, Stephen Jan.	Nepal	Using focus groups to develop contingent valuation scenarios — A case study of women's groups in rural Nepal. <i>Social Science &</i>

Name of Authors	Name of Country	Title of included study
		Medicine 64 (2007) 531–542
Joanna Morrison, David Osrin, Bhim Shrestha, Kirti Man Tumbahangphe, Suresh Tamang, Deepa Shrestha, Sushma Thapa, Natasha Mesko, Dharma S Manandhar, Anthony Costello.	Nepal	How did formative research inform the development of a women’s group intervention in rural Nepal? Journal of Perinatology (2008) 28, S14–S22
Joanna Morrison, David Osrin, Madan Manandhar, Kirti Man Tumbahangphe, Rishi Neupane, Aman Sen, Dharma SManandhar, Anthony Costello et al.	Nepal	Understanding how women’s groups improve maternal and newborn health in Makwanpur, Nepal: a qualitative study. Int Health. 2010 March ; 2(1): 25–35.
Sheetl Sharma, Edwin van Teijlingen, José M. Belizán, Vanora Hundley, Padam Simkhada, Elisa Sicuri	Nepal	Measuring What Works: An Impact Evaluation of Women’s Groups on Maternal Health Uptake in Rural Nepal. PLOS ONE (2016). 11(5): e0155144
Prasanta Tripathy, Nirmala Nair, Sarah Barnett, Rajendra Mahapatra, Josephine Borghi, Shibanand Rath, Suchitra Rath, Rajkumar Gope, Dipnath Mahto, Rajesh Sinha, Rashmi Lakshminarayana, Vikram Patel, Christina Pagel, Audrey Prost, Anthony Costello.	India (Jharkhand And Orissa/Odisha)	Effect of a participatory intervention with women’s groups on birth outcomes and maternal depression in Jharkhand and Orissa, India: a cluster-randomised controlled trial. Lancet 2010; 375: 1182–92
Suchitra Rath, Nirmala Nair, Prasanta K Tripathy, Sarah Barnett, Shibanand Rath, Rajendra Mahapatra, Rajkumar Gope, Aparna Bajpai, Rajesh Sinha, Anthony Costello, Audrey Prost.	India (Jharkhand And Orissa/Odisha)	Explaining the impact of a women’s group led community mobilisation intervention on maternal and newborn health outcomes: the Ekjut trial process evaluation. BMC International Health and Human Rights 2010, 10:25.
Tanja AJ Houweling, Prasanta Tripathy, Nirmala Nair, Shibanand Rath, Suchitra Rath, Rajkumar	India (Jharkhand And Orissa/Odisha)	The equity impact of participatory women’s groups to reduce neonatal mortality in India: secondary analysis of a cluster-randomised

Name of Authors	Name of Country	Title of included study
Gope, Rajesh Sinha, Caspar W Looman, Anthony Costello, Audrey Prost.		trial. International Journal of Epidemiology 2013;42:520–532
Swati Sarbani Roy, Rajendra Mahapatra, Shibanand Rath, Aparna Bajpai, Vijay Singh, Suchitra Rath, Nirmala Nair, Prasanta Tripathy, Raj Kumar Gope, Rajesh Sinha, Anthony Costello, Christina Pagel, Audrey Prost.	India (Jharkhand And Orissa/Odisha)	Improved neonatal survival after participatory learning and action with women’s groups: a prospective study in rural eastern India. Bull World Health Organ 2013;91:426–433B
Nirmala Nair, Prasanta Tripathy, Harshpal S Sachdev, Sanghita Bhattacharyya, Rajkumar Gope, Sumitra Gagrai, Shibanand Rath, Suchitra Rath, Rajesh Sinha, Swati Sarbani Roy, Suhas Shewale, Vijay Singh, Aradhana Srivastava, Hemanta Pradhan, Anthony Costello, Andrew Copas, Jolene Skordis-Worrall, Hassan Haghparast-Bidgoli, Naomi Saville, Audrey Prost.	India (Jharkhand And Orissa/Odisha)	Participatory women’s groups and counselling through home visits to improve child growth in rural eastern India: protocol for a cluster randomised controlled trial. BMC Public Health (2015) 15:384
Prasanta Tripathy, Nirmala Nair, Rajesh Sinha, Shibanand Rath, Raj Kumar Gope, Suchitra Rath, Swati Sarbani Roy, Aparna Bajpai, Vijay Singh, Vikash Nath, Sarfraz Ali, Alok Kumar Kundu, Dibakar Choudhury, Sanjib Kumar Ghosh, Sanjay Kumar, Rajendra Mahapatra, Anthony Costello, Edward Fottrell, Tanja AJ	India (Jharkhand And Orissa/Odisha)	Effect of participatory women’s groups facilitated by Accredited Social Health Activists on birth outcomes in rural eastern India: a cluster-randomised controlled trial. Lancet Glob Health 2016; 4: e119–28

Name of Authors	Name of Country	Title of included study
Houweling, Audrey Prost.		
Rajesh Kumar Sinha, Hassan Haghparast-Bidgoli, Prasanta Kishore Tripathy, Nirmala Nair, Rajkumar Gope, Shibanand Rath and Audrey Prost.	India (Jharkhand And Orissa/Odisha)	Economic evaluation of participatory learning and action with women's groups facilitated by Accredited Social Health Activists to improve birth outcomes in rural eastern India. <i>Cost Eff Resour Alloc</i> (2017) 15:2. DOI 10.1186/s12962-017-0064-9
Neena Shah More, Ujwala Bapat, Sushmita Das, Glyn Alcock, Sarita Patil, Maya Porel, Leena Vaidya, Armida Fernandez, Wasundhara Joshi, David Osrin.	India (Mumbai)	Community Mobilization in Mumbai Slums to Improve Perinatal Care and Outcomes: A Cluster Randomized Controlled Trial. <i>PLoS Med</i> 9(7): e1001257. doi:10.1371/journal.pmed.1001257
Kishwar Azad , Sarah Barnett, Biplob Banerjee, Sanjit Shaha, Kasmin Khan, Arati Roselyn Rego, Shampa Barua, Dorothy Flatman, Christina Pagel, Audrey Prost, Matthew Ellis, Anthony Costello,	Bangladesh	Effect of scaling up women's groups on birth outcomes in three rural districts in Bangladesh: a cluster-randomised controlled trial. <i>Lancet</i> 2010;375:1193–202
Leila Younes, Tanja A J Houweling, Kishwar Azad, Abdul Kuddus, Sanjit Shaha, Bedowra Haq, Tasmin Nahar, Munir Hossen, James Beard, Andrew Copas, Audrey Prost, Anthony Costello, Edward Fottrell.	Bangladesh	The effect of participatory women's groups on infant feeding and child health knowledge, behaviour and outcomes in rural Bangladesh: a controlled before-and-after study. <i>J Epidemiol Community Health</i> 2015;69:374–381.
Tanja AJ Houweling, Kishwar Azad, Layla Younes, Abdul Kuddus, Sanjit Shaha, Bedowra Haq, Tasmin Nahar, James Beard, Edward F Fottrell, Audrey Prost, Anthony Costello.	Bangladesh	The effect of participatory women's groups on birth outcomes in Bangladesh: does coverage matter? Study protocol for a randomized controlled trial. <i>Trials</i> 2011, 12:208

Name of Authors	Name of Country	Title of included study
Tasmin Nahar, Kishwar Azad, Bedowra Haq Aumon, Layla Younes, Sanjit Shaha, Abdul Kuddus, Audrey Prost, Tanja AJ Houweling, Anthony Costello, Edward Fottrell.	Bangladesh	Scaling up community mobilisation through women's groups for maternal and neonatal health: experiences from rural Bangladesh. <i>Pregnancy and Childbirth</i> 2012, 12:5
Layla Younes, Tanja AJ Houweling, Kishwar Azad, Anthony Costello, Edward Fottrell.	Bangladesh	Estimating coverage of a women's group intervention among a population of pregnant women in rural Bangladesh. <i>BMC Pregnancy and Childbirth</i> 2012, 12:60
Edward Fottrell, Kishwar Azad, Abdul Kuddus, Layla Younes, Sanjit Shaha, Tasmin Nahar, Bedowra Haq Aumon, Munir Hossen, James Beard, Tanvir Hossain, Anni-Maria Pulkki-Brannstrom, Jolene Skordis-Worrall, Audrey Prost, Anthony Costello.	Bangladesh	The Effect of Increased Coverage of Participatory Women's Groups on Neonatal Mortality in Bangladesh: A Cluster Randomized Trial. <i>JAMA Pediatr.</i> 2013 September ; 167(9): 816–825.
Kelly Clarke, Kishwar Azad, Abdul Kuddus, Sanjit Shaha, Tasmin Nahar, Bedowra Haq Aumon, Mohammed Munir Hossen, James Beard, Anthony Costello, Tanja A.J. Houweling, Audrey Prost, Edward Fottrell.	Bangladesh	Impact of a Participatory Intervention with Women's Groups on Psychological Distress among Mothers in Rural Bangladesh: Secondary Analysis of a Cluster-Randomised Controlled Trial. <i>PLoS One</i> 9(10): e110697
Helen A Harris-Fry, Kishwar Azad, Leila	Bangladesh	Formative evaluation of a participatory women's group

Name of Authors	Name of Country	Title of included study
Younes, Abdul Kuddus, Sanjit Shaha, Tasmin Nahar, Munir Hossen, Anthony Costello, Edward Fottrell.		intervention to improve reproductive and women's health outcomes in rural Bangladesh: a controlled before and after study. <i>J Epidemiol Community Health</i> 2016;70:663–670. doi:10.1136/jech-2015-205855
Mikey Rosato, Charles W Mwansambo, Peter N Kazembe, Tambosi Phiri, Queen S Soko, Sonia Lewycka, Beata E Kunyenge, Stefania Vergnano, David Osrin, Marie-Louise Newell, Anthony M de L Costello.	Malawi	Women's groups' perceptions of maternal health issues in rural Malawi. <i>Lancet</i> 2006; 368: 1180–88
Mikey Rosato , Sonia Lewycka, Charles Mwansambo, Peter Kazembe , Anthony Costello.	Malawi	Women's groups' perceptions of neonatal and infant health problems in rural Malawi. <i>Malawi Medical Journal</i> ; 21(4)168-173 :December 2009
Sonia Lewycka, Charles Mwansambo, Peter Kazembe, Tambosi Phiri, Andrew Mganga, Mikey Rosato, Hilda Chapota, Florida Malamba, Stefania Vergnano, Marie-Louise Newell, David Osrin, Anthony Costello.	Malawi	A cluster randomised controlled trial of the community effectiveness of two interventions in rural Malawi to improve health care and to reduce maternal, newborn and infant mortality. A Study Protocol. <i>Trials</i> 2010, 11:88.
Mikey Rosato, Charles Mwansambo, Sonia Lewycka, Peter Kazembe, Tambosi Phiri, Florida Malamba, Marie-Louise Newell, David Osrin, Anthony Costello.	Malawi	MaiMwana women's groups: a community mobilisation intervention to improve mother and child health and reduce mortality in rural Malawi. <i>Malawi Medical Journal</i> ; 22(4): 112-119 December 2010.
Sonia Lewycka, Charles Mwansambo, Mikey Rosato, Peter Kazembe, Tambosi Phiri, Andrew Mganga, Hilda Chapota, Florida Malamba, Esther Kainja, Marie-Louise Newell, Giulia Greco,	Malawi	Effect of women's groups and volunteer peer counselling on rates of mortality, morbidity, and health behaviours in mothers and children in rural Malawi (MaiMwana): a factorial, cluster-randomised controlled trial. <i>Lancet</i> 2013; 381: 1721–35

Name of Authors	Name of Country	Title of included study
Anni-Maria Pulkki-Brännström, Jolene Skordis-Worrall, Stefania Vergnano, David Osrin, Anthony Costello.		
Collins O. F. Zamawe, Chrispin Mandiwa.	Malawi	Understanding the mechanisms through which women's group community participatory intervention improved maternal health outcomes in rural Malawi: was the use of contraceptives the pathway? Glob Health Action 2016, 9: 30496
Tim Colbourn, Bejoy Nambiar, Austin Bondo, Charles Makwenda, Eric Tsetekani, Agnes Makonda-Ridley, Martin Msukwa, Pierre Barker, Uma Kotagal, Cassie Williams, Ros Davies, Dale Webb, Dorothy Flatman, Sonia Lewycka, Mikey Rosato, Fannie Kachale, Charles Mwansambo, Anthony Costello.	Malawi	Effects of quality improvement in health facilities and community mobilization through women's groups on maternal, neonatal and perinatal mortality in three districts of Malawi: MaiKhanda, a cluster randomized controlled effectiveness trial. Int Health. 2013 September ; 5(3): 180–195.

Table 3: List of systematic reviews included in the scoping review

Name of authors	Title of included reviews
Audrey Prost, Tim Colbourn, Nadine Seward, Kishwar Azad, Arri Coomarasamy, Andrew Copas, Tanja AJ Houweling, Edward Fottrell, Abdul Kuddus, Sonia Lewycka, Christine MacArthur, Dharma Manandhar, Joanna Morrison, Charles Mwansambo, Nirmala Nair, Bejoy Nambiar, David Osrin, Christina Pagel, Tambosi Phiri, Anni-Maria Pulkki-Brännström, Mikey Rosato, Jolene Skordis-Worrall, Naomi Saville, Neena Shah More, Bhim	Women's groups practising participatory learning and action to improve maternal and newborn health in low-resource settings: a systematic review and meta-analysis. Lancet. 2013 May 18; 381(9879): 1736–1746.

Shrestha, Prasanta Tripathy, Amie Wilson, Anthony Costello.	
Tanja AJ Houweling, Joanna Morrison, Glyn Alcock, Kishwar Azad, Sushmita Das, Munir Hossen, Abdul Kuddus, Sonia Lewycka, Caspar W Looman, Bharat Budhathoki Magar, Dharma S Manandhar, Mahfuza Akter, Albert Lazarous Nkhata Dube, Shibanand Rath, Naomi Saville, Aman Sen, Prasanta Tripathy, Anthony Costello.	Reaching the poor with health interventions : programme-incidence analysis of seven randomised trials of women's groups to reduce newborn mortality in Asia and Africa. J Epidemiol Community Health 2016;70:31-41.

Table 4: General characteristics of included studies (snapshot of data extraction table of included studies)

SN	Author(s)	Institution/country(s) that funded / conducted / published the study	What area(s) are addressed by the study	Were Women's groups defined in the study?
1	(Manandhar et al. 2004)	1. Funded by DfID 2. Conducted in Nepal 3. Published in UK (The Lancet)	Neonatal/ Peri-natal Health	No definition given, but referred to WARMI/Bolivian study
2	(Borghi et al. 2005)	1. Funded DfID, UNICEF, WHO, UNFPA 2. Conducted in Nepal 3. Published in UK (The Lancet)	Cost Effectiveness Analysis	As in (1) above (but not specifically mentioned)
3.	(Morrison et al. 2005)	1. Funded DfID, UNICEF, WHO, UNFPA 2. Conducted in Nepal 3. Published in UK (BMC Pregnancy & Childbirth)	Processes of community mobilization and participation by the women's groups	No definition given, but referred to WARMI/Bolivian study
4.	(Wade et al. 2006)	1. Funded DfID, UNICEF, WHO, UNFPA 2. Conducted in Nepal 3. Published in UK (BMC Pregnancy & Childbirth)	Assessment of Perinatal Care Practices/Behaviour; specifically (home care practices and care-seeking behaviour)	As in (1) above (but not specifically mentioned)
5.	(Borghi et al. 2007)	1. Funded by DFiD 2. Study was conducted in Nepal 3. Published by Elsevier in Social Science & Medicine	- economic evaluation study (use of qualitative research methods to study willingness to pay/contingent valuation analysis/scenarios)	As in (1) above (but not specifically mentioned)
6.	(Morrison et al. 2008)	1. Funded by DfID, UNICEF, WHO 2. Conducted in Nepal 3. Published in the Journal of Perinatology	Role of formative research in profiling contextual problems & providing potential context specific solutions in studies.	No definition given, but referred to WARMI/Bolivian study

SN	Author(s)	Institution/country(s) that funded / conducted / published the study	What area(s) are addressed by the study	Were Women's groups defined in the study?
7.	(Morrison et al. 2010)	1. Funded by DfID, UNICEF, WHO, UNFPA 2. Conducted in Nepal 3. Published in International Health, Journal of the Royal Society of Tropical Health & Hygiene	Using qualitative research methods to understand how women's groups improve MNH	No definition given, but referred to WARMI/Bolivian study
8.	(Tripathy et al. 2010)	1. Funded by Health Foundation, DfID, Wellcome Trust, and the Big Lottery Fund (UK) 2. Conducted in Jharkand & Orissa, India 3. Published in the (UK) The Lancet	Maternal & Newborn Health	No definition given, but referred to WARMI/Bolivian study
9	(Rath et al. 2010)	1. Same as (8) above? 2. Conducted in Jharkand & Orissa, India 3. Published in BMC International Health and Human Rights	Assessment of the trial processes in (8) above	No definition given, but referred to WARMI/Makwanpur studies
10	(Houweling et al. 2013)	1. Funded by Economic and Social Research Council, DfID and the Big Lottery Fund 2. Conducted in Jharkand & Orissa, India 3. Published in International Journal of Epidemiology	Equity Impact Study on Neonatal Mortality	As in (8) above
11	(Roy et al. 2013)	1. Funded by The Big Lottery Fund, UK and by a Wellcome Trust. 2. Conducted in Jharkand & Odisha (formerly Orissa), India 3. Published in Bulletin of World Health Organization	Neonatal health/ neonatal mortality rates reduction and the associated mechanisms	As in (8) above
12	(Tripathy et al. 2016)	1. Funded by the Big Lottery Fund and ESRC-DFID 2. Conducted in Jharkand & Odisha, India 3. Published in the Lancet Global Health	To test the effect of participatory women's groups facilitated by ASHAs on birth outcomes, including neonatal mortality.	No definition or reference to WARMI/Makwanpur, but referred to participatory learning and action cycle
13	(Sinha et al. 2017)	1. Funded by the (Big Lottery Fund and ESRC-DFID) ? 2. Conducted in Jharkand & Odisha, India	Cost effectiveness analysis of the women's group intervention in reducing NMR	No, but Participatory Learning Approach (PLA) approach was referred to

SN	Author(s)	Institution/country(s) that funded / conducted / published the study	What area(s) are addressed by the study	Were Women's groups defined in the study?
		3. Published in the Cost Effectiveness and Resource Allocation Journal	conducted in (12) above.	
14	(Nair et al. 2015)	1. Funded by UK Medical Research Council, the Wellcome Trust and DfID 2. To be conducted in Jharkand & Odisha, India 3. Published in BMC Public Health	To assess the impact, cost-effectiveness, and scalability of a community intervention with a government-proposed community-based worker to improve growth in children under two in rural India (Nutrition & Child Health)	No definition or reference made to WARMI/Makwanpur studies. But referred to participatory learning and action cycle
15	(More et al. 2012)	1. Funded by the ICICI Foundation for Inclusive Growth – Centre for Child Health and Nutrition And The Wellcome Trust 2. Conducted in Mumbai, India 3. Published in PLoS Medicine	- To test an intervention in which urban slum-dweller women's groups discussed perinatal health, improved their knowledge through peer-learning, and developed and implemented local strategies.	No, neither was any mention made of PLA or WARMI/
16	(Azad et al. 2010)	1. Funded by Women and Children First, the UK Big Lottery Fund, Saving Newborn Lives, and the UK Department for International Development (DfID) 2. Conducted in Bangladesh 3. Published in the Lancet	- Maternal & Newborn Care	None, but referred to participatory women's group/participatory learning & action
17	(Younes et al. 2015)	1. Funded by The Big Lottery Fund & Wellcome Trust (UK) 2. Conducted in Bangladesh 3. Published in Journal of Epidemiology & Community Health	Under fives	No, but Participatory Learning Approach (PLA) approach was referred to
18	(Houweling et al. 2011)	1. Funded by The Big Lottery Fund (UK) 2. To be conducted in Bangladesh 3. Published in Trials	To examine if women's group coverage is a main determinant of their impact	No, but Participatory Learning Approach (PLA)/ Bolivia approach was referred to

SN	Author(s)	Institution/country(s) that funded / conducted / published the study	What area(s) are addressed by the study	Were Women's groups defined in the study?
19	(Nahar et al. 2012)	1. Funded by Big Lottery (UK) 2. Conducted in Bangladesh 3. Published in BMC Pregnancy and Childbirth	To describe the process and measurement of scaling-up coverage of a community mobilisation intervention for maternal, child and neonatal health in rural Bangladesh	No, but Participatory Action Cycle was referred to
20	(Younes, Houweling, Azad, Costello & Fottrell, 2012)	1. Funded by Big Lottery (UK) 2. Conducted in Bangladesh 3. Published in BMC Pregnancy and Childbirth	To describes four different methods, and their underlying assumptions, to estimate coverage of a community mobilisation women's group intervention for maternal and newborn health among a population of pregnant women in rural Bangladesh	NA
21	(Fottrell et al. 2013)	1. Funded by The Big Lottery Fund & Wellcome Trust (UK) 2. Conducted in Bangladesh 3. Published in JAMA (Paediatrics)	Neonatal mortality rates	No, but Participatory Learning Approach (PLA) approach was referred to
22	(Clarke et al. 2014)	1. Funded by Big Lottery Fund and Wellcome Trust 2. Conducted in Bangladesh 3. Published in PLoS One	- Maternal mental health - To assess the effect of a participatory women's health groups led by local women intervention on postpartum psychological distress in rural Bangladesh.	No, but Participatory Learning Approach (PLA) approach was referred to
23	(Harris-fry et al. 2016)	1. Funded by the Big Lottery Fund (UK) and Wellcome Trust 2. Conducted in Bangladesh 3. Published in Journal of Epidemiology &	To assess a participatory women's group intervention that focused on women's health, nutrition and family	No, but Participatory Learning Approach (PLA) approach was referred to

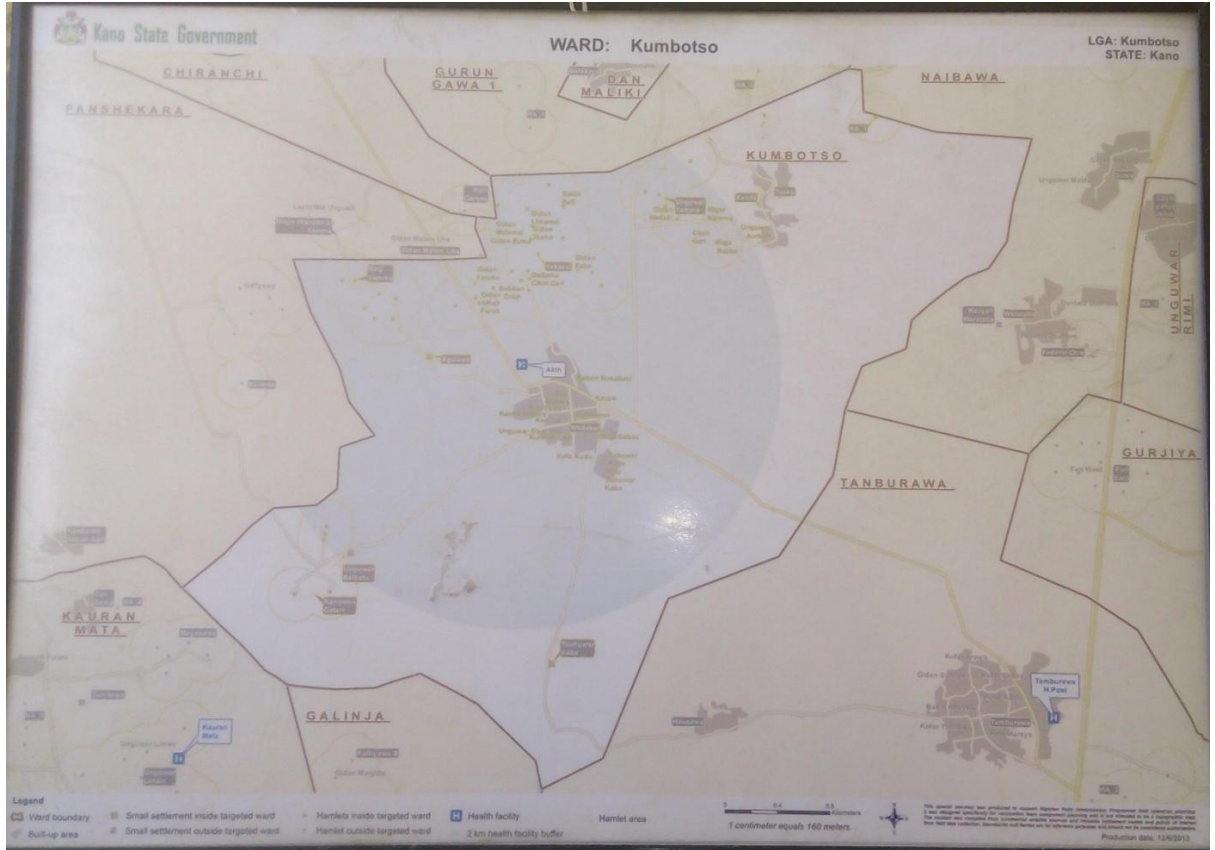
SN	Author(s)	Institution/country(s) that funded / conducted / published the study	What area(s) are addressed by the study	Were Women's groups defined in the study?
		Community Health	planning.	
24	(Rosato et al. 2006)	1. Funded by the Saving Newborn Lives Initiative and the DfID 2. Conducted in Malawi 3. Published in the Lancet	The perceptions of women's groups to maternal health problems	No, but Participatory Learning Approach (PLA) approach was referred to
25	(Rosato, Lewycka, Mwansambo, Kazembe & Costello, 2009)	1. (Funded by the Saving Newborn Lives Initiative and the DfID)? 2. Conducted in Malawi 3. Published in Malawi Medical Journal	To present the perceptions of women in rural Malawi regarding the health problems affecting neonates and infants	No, but Participatory Community Action Cycle approach was referred to
26	(Lewycka et al. 2010)	1. Funded by Saving Newborn Lives, DfID, the Wellcome Trust, National AIDS Commission, Malawi and UNICEF, Malawi 2. Conducted in Malawi 3. Published in TRIALS journal	To test the impact of a community mobilisation intervention run through women's groups, on home care, health care-seeking behaviours and maternal and infant mortality as well as the impact of a volunteer-led infant feeding and care support intervention, on rates of exclusive breastfeeding, uptake of HIV- prevention services and infant mortality	No, but Participatory Community Action Cycle, Community based participatory intervention, Participatory planning, or Community action cycle approach were referred to
27	(Rosato et al. 2010)	1. Funded by Saving New- born Lives ,DfID, the Wellcome Trust, and UNICEF Malawi. 2. Conducted in Malawi 3. Published in Malawi Medical Journal	To build the capacities of communities to take collaboration between the Malawi Ministry of Health (The control of the mother and child health issues that affect them. To achieve Department of Paediatrics at	No, but Participatory Community Action Cycle approach was referred to

SN	Author(s)	Institution/country(s) that funded / conducted / published the study	What area(s) are addressed by the study	Were Women's groups defined in the study?
			Kamuzu Central Hospital this it comprises trained local female facilitators establishing groups and and Mchinji District Hospital) and the UCL Centre for using a manual, participatory rural appraisal tools and picture cards to International Health and Development in the UK. They guide them through a community action cycle to identify and implement project was established in 2003 and is conducting the first solutions to mother and child health problems	
28	(Lewycka et al. 2013)	1. Funded by Saving Newborn Lives, DfID, Wellcome Trust, Institute of Child Health, and UNICEF Malawi 2. Conducted in Malawi 3. Published in the Lancet	See (26) above	See (26) above
29	(Zamawe & Mandiwa, 2016)	1. Funding - none 2. Conducted in Malawi 3. Published in Global Health Action Journal	Whether participation in women's groups was associated with contraceptive use in Malawi	Not specifically but extrapolated from Maimwana study
30	(Colbourn et al. 2013)	1. Funded by The Health Foundation, London, UK 2. Conducted in Malawi	Evaluated community and facility-based interventions to reduce maternal, perinatal &	No, but WARMI/Participatory Women's group Community intervention was referred to

SN	Author(s)	Institution/country(s) that funded / conducted / published the study	What area(s) are addressed by the study	Were Women's groups defined in the study?
		3. Published in the International Health Journal	neonatal deaths in three districts of Malawi.	
31	(Prost, Colbourn, Seward, Azad, Coomarasamy, Copas, Houweling, Fottrell, et al. 2013)	1. Funded by Wellcome Trust, Ammalife (UK registered charity), and by the National Institute for Health Research Collaboration for Leadership in Applied Health Research and Care for Birmingham and the Black Country programme 2. Conducted in UK 3. Published in the Lancet	Assessed the effects of women's groups practising participatory learning and action, compared with usual care, on birth outcomes in low-resource settings	- Women's groups practising participatory learning and action - participatory women's groups - In all trials, variants of a participatory learning and action cycle were tested
32	(Houweling et al. 2016)	1. Funded by the Economic and Social Research Council (ESRC) and the Department for International Development (DfiD) 2. Conducted in UK 3. Published in Journal of Epidemiology & Community Health		

Appendix III : Pictures of Women's Groups Members in Tudun Kaba and Kayi communities and map of Kumbotso LGA, Kano State

Map of Kumbotso LGA



Picture 1: Women's group meeting at Kayi community



(Photo was taken by research team members during the health literacy project)

Picture 2: Female facilitator showing a drawing of a maternal danger sign during a peer-led women's group meeting at Kayi community



(Photo was taken by research team members during the health literacy project)

Picture 3: Peer-led women's group meeting at Tudun Kaba community



(Photo was taken by research team members during the health literacy project)

Picture 4: Women's group member at Tudun Kaba practising the use of the mobile phone



(Photo was taken by research team members during the health literacy project)

Picture 5: The main street in Tudun Kaba (with electric poles with no cables, open drainage and women going for the group meeting)



(Photo was taken by research team members during the health literacy project)

Picture 6: Houses (part mud and part cement brick buildings with an electric pole but no electric cables) in Tsamawa community



(Photo was taken by research team members during the health literacy project)

Picture 7: Road leading to Tsamawa community



(Photo was taken by research team members during the health literacy project)

Picture 8: Children playing in front of a house in Tsamawa community



(Photo was taken by research team members during the health literacy project)

Appendix IV : Snapshot of the thematic matrices of FGDs, KIIs including other transcripts and field notes

Table 1a: Snapshot of thematic matrix of first set of KIIs

KII id/Themes	KbKII1	KyKII1	TsKII1
<p>Common illnesses occurring during pregnancy or child birth or breastfeeding periods and their manifestations or outcomes</p>	<ul style="list-style-type: none"> - zazzabi da kuma harke hakora (Fever & fits in children) - zazzabi, ciwon kai da kuma mura (Fever, headache & coryza in adults) - ciwon sanyi.....hana kuzari ko mai shafar idanuwa suyi ta ruwa (A 'cold sickness' that may affect the joints or eyes) - Basir (a broadly used term that may denote haemorrhoids, constipation, erectile dysfunction.....) - (Basir causes) cikin mutum ya rika zafi (stomach pain), yaje bahaya sai yaga jini (bloodstained stools), Leben baki zai yi Ja (red lips), rugugun ciki (flatulence), - ciwon sanyin nan yafi addabammu (the 'cold sickness' afflicts us most 	<ul style="list-style-type: none"> - (In adults) mostly malaria, typhoid, shawara and bloody urine (tsargiya) - 'usual malaise ' of pregnancy (kasalar Mai ciki) and vomiting - some women also have leg swelling, fits and severe bleeding during or after delivery - 'Basir' also afflict pregnant women and can cause constipation - commonest are typhoid, malaria, high blood pressure and cough & cold (among adults) - "basir" is also considered as a serious problem in this community - typhoid, ulcer & malaria - some women may have problem during delivery of a baby or when they having their menstrual periods 	<ul style="list-style-type: none"> - "cold sickness" (ciwon sanyi) - headache, stomach pain and hernia swellings - most serious or important ailment in their community is stomach pain (ciwon ciki) which progresses to become a hernia - There was a recent case of maternal death that mainly occurred due to lack of blood - shawara (jaundice), followed by darkish vomiting, then fever and headache. This is a big health problem in our community and we generally call it "typhoid" - (In children) cough with vomiting and bulging eyes.

	<p>commonly)</p> <ul style="list-style-type: none"> - yawan zubar jini da jijjiga mu yafi damun mu (vaginal bleeding & eclamptic fits are the most serious problems for our pregnant women) - Ana samun yoyon fitsari, amma ba sosai ba.(there are occasional cases of obstetric fistula) 	<ul style="list-style-type: none"> - Typhoid and ulcer are regarded as the most important because they can happen suddenly, especially typhoid - while ulcer is painful and like a sore in your tummy - we believe that all pregnant women are not completely well until they get to about their 7th month of pregnancy when the pregnancy (ciki means stomach & pregnancy too) has become “matured” 	<ul style="list-style-type: none"> - Epilepsy is also another problem - (In pregnant women) vomiting, malaise & fever - commonest ailments in our community are cough, fever, vomiting and diarrhoea in adults. However, vomiting and diarrhoea are the most serious ailments in our community - children more commonly suffer from fever and headache - The commonest sickness pregnant women face in our community is headache followed by stomach pain
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Table1b: Snapshot of thematic matrix of first set of KIIs

KII id/Themes	KbKII1	KyKII1	TsKII1
<p>Belief in the efficacy of modern, spiritual or traditional treatments for illnesses in expectant mothers</p>	<p>-(For treatment of 'Basir') a nemi magani ko na gargajiya ko kuma aje asibiti (seek for traditional medicine or go to hospital)</p> <p>- akwai wanda yake fama da Habo na bashi magani ya zuba a hancinsa kuma washegari ya warke (I gave some herbal powder for a nose bleed & they got better)</p> <p>- (for eclamptic fits) Mu kanje asibiti (we usually go to the hospital)</p> <p>- (pelvic pain & vaginal bleeding) ciwon mara bamu cika kaiwa asibita ba, muna hadawa da wanzami (we usually resort to the traditional barber for treatment of this condition)</p> <p>- idan muka jarraba da wanzami muka ga abin yafi karfinsa musan bada shawara a tafi asibiti.(we take the pregnant woman to the hospital only if the</p>	<p>- For the treatment of malaria, some go to get seen at the local health facility use local Hausa medicine</p> <p>- While typhoid is best treated by using a concoction oh a flowering plant (pirpir) with pineapple peels and lime</p> <p>- for these group of women, we usually take them to the local health facility</p> <p>- Some TBAs refer women with genital tears to health facility for repair</p> <p>- the mildly sick go to see the chemist (PMV)</p> <p>- if it is severe they go the hospital</p> <p>- " Hausa (traditional) Medicine" is also used by those who know about it</p> <p>- Most of our people buy their</p>	<p>- community members mainly patronise the "hospital" at Kumbotso or Panshekara as well as the local "chemist"</p> <p>- community members actively seek and use "rubutu" from local mallams when they fall sick. Traditional medicinal herbs, roots and tree shavings are widely used by community members</p> <p>- we advise them to go to the hospital but they may choose to go to local mallams or traditional barbers for treatment</p> <p>- This mallam put together a medication using a red colored goat about two years ago and since then, my son has not been having those painful attacks</p> <p>- Affected individuals go to the hospital after taking paracetamol tablets without getting better and conducting lab tests</p> <p>- The TBA is versed in reciting the prayer for the delivery of the placenta (karatun mabi'iyar) which she does after</p>

	<p>traditional medicine does not make her better)</p> <ul style="list-style-type: none"> - (for cases of prolonged labour) . Idan muka bada taimakon mu muka ga abin bai yi ba sai mu wuce asibiti(after giving traditional medications and the woman does not deliver, we advice them to go to the hospital) - (for prolonged labour) Liman...yakan bada nashi taimakon na addu'a da rubutu na nakuda kuma akan dace(the Imam also gives 'holy' water & offers prayers to treat prolonged labour) 	<p>drugs from street drug vendors on the street and if you are lucky, the drugs may work for you</p> <ul style="list-style-type: none"> - Medicines for"basir" from my experience are just a matter of luck! - I generally advise people to take their pregnant women to the hospital when they are sick - I also write & give "rubutu" as well as herbal preparations made from local plants, plant leaves & tree barks to pregnant women when they are sick and they get better - pregnant women with certain ailments can be referred to other traditional healers that are experts or skilled in treating that condition through word of mouth 	<p>the TBA is called when the placenta is taking too long to come down</p> <ul style="list-style-type: none"> - TBA also requests from the local mallams for ("rubutun nakuda") holy water for hastening prolonged labour - The TBA also has a prayer incantation that she makes into a cup of water which she gives the woman in labour to drink so as to facilitate a difficult or prolonged labour.
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Table 1c: Snapshot of thematic matrix of first set of KIIs

KII id/Themes	KbKII1	KyKII1	TsKII1
<p>Perceptions about the role of change in nutritional lifestyles from local to modern diets in making pregnant women more prone to sickness</p>	<ul style="list-style-type: none"> - Basir jinin mutum ne yake tabuwa abin dake kawo shi kuma shine maiko da sikari. (Basir is caused by too much fat & sugar in the blood) - ja musu kunne dasu kiyayi daci da zaki yayin da suke da ciki (pregnant women should be warned not to eat bitter or sugary diets) - young girls of today don't eat properly, they prefer to eat polished rice (shinkafar gomnati) and spaghetti (taliya) - 	<ul style="list-style-type: none"> - the change in our diet must be causing all these problems that is affecting the health of pregnant women - . We now eat a lot of processed and canned food, Maggi and soft drink. These things we are consuming may explain this upsurge (in cases of 'Basir') - no food taboos that are specific for pregnant women (in our community) except you know that pregnant women may be put off certain foods during pregnancy because of nausea associated with early pregnancy - The woman should be given traditional hot baths and the husband should provide her with a good supply of nutritious foods such as roasted meat if he can afford it - (mullahs) advise pregnant women to have regular sexual intercourse to nourish the baby and prevent a difficult delivery but most women ignore this advice - A pregnant woman should avoid eating sweet foods because it can cause vaginal discharge - A pregnant woman must also avoid bitter foods ('daci' or 'bawri') because they are can cause her to miscarry the pregnancy - bitter substances are very good for a man to eat if he doesn't want his wife to get pregnant, or he wants to delay 	<ul style="list-style-type: none"> - A recent development is the tendency for (pregnant) women to refuse to eat our local grains such as millet & guinea corn which are healthier and they prefer to eat foods like "indomie" (fast food) processed noodles that are easy/fast to cook - The TBA also instructs the mother of the newborn child to be given "kunu" millet or guinea corn gruel so as make the breast milk flow -

KII id/Themes	KbKII1	KyKII1	TsKII1
		<p>having a child for whatever reason</p> <ul style="list-style-type: none"> - the change in our diet from local (wholemeal) grains like millet to polished white rice is destroying our health - I also advise pregnant women to refrain from eating any food, drug or Hausa Medicine that is bitter because these bitter food can cause miscarriage - 	

Table 2a: Thematic matrix of first set of FGDs

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
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FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
<p>Common illnesses occurring during pregnancy or child birth or breastfeeding periods</p>	<ul style="list-style-type: none"> - laulayi (malaise), za ka iya cin abinci wani cikin kuma ba zaka iya ba (lack of appetite in some pregnancies), kasala(body weakness), amai(vomitting), yawan kwanciya (lying down a lot) - yawan zazzabi(frequent bouts of fever during the breast feeding period) - Bayan mun dawo gida yaron ya fara suma(after coming back home from the hospital, my newborn child started fainting) - zubar da jini(vaginal bleeding) - ciwon ciki.(abdominal pain) - amai da kuma zazzabi(vomiting & fever) - zubar ruwa ga mata idan ciki ya tsufa(vaginal discharge during late pregnancy) - rashin kyan hanya ita matsala ce babba ga mata masu juna biyu idan za akaisu asibiti haihuwa(bad roads are a problem when conveying a pregnant woman to the hospital) - akwai rashin zuwa awo akan 	<ul style="list-style-type: none"> - da na samu ciki nakan ji kuraje sun cika mini baki(I develop mouth sores once I am pregnant) - laulayi da kuma ciwon ciki, ciwon Kai, da zazzabi(Malaise, abdominal pain, headache & fever) - maruru da dadewar gaba(Vaginal sores & soreness) - matsalar maruru, dadewar gaba, kaikayin gaba, da kuma zubar da ruwa mai wari.(perineal boils, vaginal itching, soreness & discharge) - ciwon nono(breast tenderness) - kaikayin gaba(vaginal itching) - Dana zo haihuwa jikina ya kumbura sosai.(Body swelling) - A dai wannan shekarar mace daya ce ta rasu kuma haihuwar fari ne(Only one woman died during labour this year and it was her first pregnancy) - Doguwar nakuda sakamakon rashin kai mutum asibiti da kuma jijjiga. Kuma har ila yau idan Mabiyya bata fado bad a kuma zubar da jini mai tsanani (Prolonged labour, fits, retained placenta & bleeding can cause death during pregnancy) 	<ul style="list-style-type: none"> - ciwon ciki da ciwon mara(abdominal & pelvic pain) - Ciwon nono(breast tenderness)

Table 2b: Snapshot of thematic matrix of first set of FGDs

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
Belief in the efficacy of modern, spiritual or traditional treatments for illnesses in mothers	<p>- wani lokaci tana zuwa da sauki wani lokaci kuma sai anje asibiti (some child births are easy, but for some you have to go to the hospital)</p> <p>- A lokacin naje asibiti na karbi magani. A wani lokaci kuma na kan sha maganin gargajiya (maganin hausa). (Sometimes I go to the hospital and sometimes I use traditional medicine)</p> <p>- yawan shan maganin gargajiya da yawa shi yake kawo mana saukin haihuwa. (Regular ingestion of traditional medicine will make the childbirth easier)</p> <p>- A gaskiya ni a asibiti na haihu(I gave birth in the hospital)</p>	<p>- A lokacin ina amfani da hodar kuraje(I use medicinal powder for my mouth sores)</p> <p>- Na kanje asibiti Awo kuma akan duba ni a bani magani(I sometimes go for ANC & to collect my drugs)</p> <p>-</p>	<p>- duk cikin da na samu sai naje asibiti anyi mini Karin ruwa sannan nake jin dadi sannan in dawo gida (I always get admitted to hospital for IV fluid when I am pregnant)</p> <p>- wani likita yazo yayi dan dabarunsa ya tsaga ni, da aka tsagani zaki yayi ta zuba kuma sai da ya gama zuba duka sai Allah ya kawo haihuwar.(I was almost operated during my last pregnancy until a doctor came & ruptured my membranes before the labour fully started.)</p> <p>- da, akanyi jike-jiken magani da bauren jeji da su sabara, da su marke duk a dauko a zuba a tukunya a sha(In the past we used to make concoctions from different plants and give pregnant women to drink)</p>

Table 2 c: Snapshot of thematic matrix of first set of FGDs

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
<p>Prevailing Perceptions of pregnancy as mostly a normal or no risk condition</p>	<p>- A gida na haife ta(I gave birth at home) - Mace zata ji karfi a jikinta kuma zata ji dan da yake cikinta yana yawan yin motsi, zata kuma ci abinci ta koshi, tayi bacci babu wata matsala.(In a healthy pregnancy, a woman feels strong, eats well, sleeps well and the baby moves a lot in her womb)</p>	<p>- Ni kadai na haihu(I gave birth alone) - Ni kadai na haihu lafiya.(I gave birth alone at home) - Gaskiya ni a gida na haihu kuma mahai fiya ta taimaka mini matuka(I gave birth at home with the support of my mother) - a gida na haihu(I gave birth at home) - Ni dai babu kowa a wurina lokacin da na haihu(there was no one with me when I gave birth)</p>	<p>-Wasu manyan wannan karkara idan kana zuwa asibiti zasu ce ka fiye gigiwa kana kawo musu sabon abu(Some of our elders frown at pregnant women who go to the hospital regularly)</p>

Table 2d: Snapshot of thematic matrix of first set of FGDs

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
<p>Persisting local belief systems and culture about the role of destiny, spiritual and other factors in the causation of sickness during the period of pregnancy, child birth & breastfeeding</p>	<ul style="list-style-type: none"> - Allah ne ya taimaka (It is Allah ... Who helped me to give birth safely) - Dan gana da Allah shine ya kawo haka cikin sauki (Depending on Allah made the birth easy) - Allah ne ya kawo(It was destined by Allah) - Allah shi kadai ya sani(Only Allah knows) - sai sukace rashin zuwa awone ya jawo haka(the hospital staff told me the problem I had was because I was not attending ANC) - Rashin Awo shi ya jawo min dogon suman da nayi. Cibiyar ce bata fadi ba.(it was lack of ANC attendance & retained placenta that caused me to faint (.....following severe blood loss) 	<ul style="list-style-type: none"> - da na samu ciki nakan ji kuraje sun cika mini baki(I develop mouth sores once I am pregnant) - Yawanci ciwo ne da ake samunsa a bayan gida da rashin tsabta na ya' mace(most of the illnesses are caused by lack of hygiene)- 	<ul style="list-style-type: none"> - Babu wata kungiya da take taimaka mana(there is no group that is supporting pregnant women) - Ikon Allah. Na sha rubutu(Allah helped me, I also drank some holy water)

Table 2e: Snapshot of thematic matrix of first set of FGDs

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
<p>4. Changing norms regarding who takes responsibility for a sick pregnant woman</p>	<p>- Gaskiya babu wani tallafi fa yake zuwa gare mu (No one is supporting us during pregnancy)</p> <p>- lokacinn akwai sakaci daga wajen manyan mu (iyaye)(there was negligence on the part of my parents because they did not take me to the hospital)</p> <p>- sai da kishiyar mahaifiya ta dage akan sai an kaini asibiti. (it was my mother's co-wife that insisted that I must be taken to the hospital)</p> <p>- Babu wani tallafi da muka samu sai dai yan'uwa da kuma mazajen mu(When I was pregnant, I only got support from my relatives and my husband)</p>		<p>-Wasu manyan wannan karkara idan kana zuwa asibiti zasu ce ka fiye gigiwa kana kawo musu sabon abu(Some of our elders frown at pregnant women who go to the hospital regularly)</p> <p>- Bamu da shugabani da ake tuntuba anan(We cannot talk to our leaders/elder about these 'maternal' health issues)</p> <p>-</p>

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
	<p>- Idan lokacin awo yazo babu kudi ni kuma sai in zauna a gida in fasa zuwa awon.(when it is time for ANC & I don't have money, I just stay at home)</p> <p>- Wadanda suka tallafa mini sune mijina da kuma abokan arziki(my husband & some good friends supported me)</p> <p>-</p>		

Table 2f: Snapshot of thematic matrix of first set of FGDs

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
7. Absence of any "community asset" or active local (women/community) group championing the health of mothers	<p>- A gaskiya babu (There are none)</p> <p>- Babu. (None exists)</p> <p>- Babu (none)</p> <p>- Babu wata kungiya da ta bani tallafi (none)</p> <p>- Akwai wata kungiya da tazo take tambayar mata masu ciki kwanakin cikinsu sannan suyi musu allura(A group came once asking the stage of pregnancy before administering an injection to you)</p> <p>- Muna bukarar mace likita anan garin wadda idan haihuwa tazo da matsala a nemota(We need a female doctor to help</p>	<p>- A yanzu muna da wata kungiya idan za'a haihu mukan buga wa wata ungozoma waya a asibiti sai a turo mota azo a dauketa akaita can asibiti ta haihu a can. Akwai wadansu kuma idan haihuwa tazo maimakon akai matar asibiti sai su kira ma'aikatan jinya su zo gida su karbi haihuwar a gida(we have a community group that helps women in labour to the hospital or call health workers to see her at home)</p> <p>- A'a babu (No women group that is concerned with health of mothers)</p>	<p>- Gaskiya babu(none)</p> <p>-</p>

FGD id/Themes	KbFGD1	KyFGD1	TsFGD1
	us during childbirth in our community)		

Acronyms used in the thematic matrix

SN	Data Sources	Acronym	Meaning
1.	FGDS	KbFGD1	FGD with women group members in Tudun Kaba community
		KyFGD1	FGD with women group members in Kayi community
		TsFGD1	FGD with female community members in Tsamawa community
2	KIIs	KbKII1	KII with maternal health gatekeepers in Tudun Kaba community
		KyKII 1	KII with maternal health gatekeepers in Kayi community
		TsKII1	KII with maternal health gatekeepers in Tsamawa community

Table 2e: Snapshot of research diary of female facilitators (triangulated with first set of FGDs/KIIs)

Date	Name persons met with	Purpose and what agreed during the meeting	Reflection on those facts/issues discussed	Any other observation
29/09/2015 (Kayi)	Women's group members	The women group agreed to meet again next meeting inshallAllah	The most important issue that has been discussed with the women group are(1) serious complain about Vagina infections and boil (2)Rashes in the mouth (3)Appearance of something from the private part called (Gwanwa) in the local language (Hausa) during labour or after delivery	I my own opinions the problems mentioned by the women may occur due to lack of proper care the body and their environment, especially their toilet. Some among the women in the community came late during the interview which led to disturbance or noisemaking during focus group discussion
19/12/2015 (Tudun kaba)	Women's group members	Orient the women group in (Tudun kaba) to the maternal health literacy research project. In the meeting, they all agreed to enlighten other women about the importance of this project and also promised to come for the next meeting	From discussion i made by with the women group, I found that five(5) women died during delivery and some after weeks of delivery within this year presently.(1) Two of the women died during delivery due to bleeding (placenta) one of them at Tudun Bayero (2) The other women died in the afternoon after delivery due to shortage of blood (3) while the other one died due to sickness called (fasso which is genital tear) the woman's vagina (4) The last one, the baby died first before the mother within 7weeks of delivery (5)	On 16/1/2015, 3days before the women group meeting I went to T/kaba for the arrangement and sub meeting of women list which we are going to discuss with. 19/1/2015 by 2.30 we arrived at T/kaba and found the group absent. Then we stay for some minutes before they come, so the group is not well organised.

			Two babies died within 6-7weeks of their birth due to malnutrition and illness .	
7/1/2016 (Tsamawa)	Women in the community	To discuss with the women in the community on maternal-neonatal health matters	<p>During the discussion with the TBA and her apprentice</p> <ul style="list-style-type: none"> - I found that mostly the women prefer to delivered at home than going to hospital I.e by the help of (RUBUTU) and herb from their elders , - From the research they normally go to hospitals only when they are seriously sick during labour, Inorder to seek for assistance from the health - - They also complained of breast feeding . some mothers lack enough milk to feed their baby. Other say there is changes in milk , which they call it(JUYIN MAMA) & when the child feed such milk it lead them to excretion (diarroea). -No any wome's group exists, Only polio vacciators visit and give them some free fever medicine for their children. 	It is 7/1/2016 the first day we visited Tsamawa community, we stayed in the bus for some minutes to rehearse what we were to discuss with the women before the village head was informed of our arrival. There was a lot of noise and most of the women came late.

Table 2f: Snapshot of thematic matrix for the auto-diagnosis sessions

Auto-diagnosis Step id/Themes	Kb-AD	Ky-AD
<p>Auto-Diagnosis - Step 1:</p> <p>Recent story or record of any deaths of mothers or newborn in the community .</p>	<p>- Ba'asamu wadda tar as ranta ba amma akwai wannan matar da muke tare da ita anan ta sha wahala wajen nakuda.(No woman has lost her life recently here but one of us at this meeting almost lost her life during labour)</p>	<p>- Matar haihuwa tayi a gida amma kuma ta rasu. (the woman died at home whilst giving birth)</p> <p>- A dai wannan shekarar mace daya ce ta rasu kuma haihuwar fari ne(Only one woman died during labour this year and it was her first pregnancy)</p> <p>- Akwai anan makwabtanni Tudun Bawa. Tana zuwa Awo asibiti akai-akai. Da ta fara jin nakuda da kafarta takai kanta asibiti. Matar tana bayanin cewa tana jin yunwa bayan an kaita asibitin kafin yan'uwanta su dawo daga sayo mata kunu sai Allah yayi mata rasuwa. (A pregnant woman from a neighbouring village, Tudun Bawa died at Dawaki Hospital)</p> <p>- Akwai wata (Anan garin Tudun Kaba Garu) bayan ta haihu akace wai tana da Faso. Aka kaita asibiti aka kira likita suka duba ta. Bayan kwana biyu rashin lafiyar ta sake dawowa. Haka dai ta rikayi sai iyayenta suka dauko ta daga asibiti suka kawo ta gida sunayi mata maganin gargajiya. Bayan suna da sati daya sai ta rasu.(There was the case of another woman in (Tudun Kaba Garu)who had a perineal tear and was taken to the hospital but it did not heal, so her parents took her home to try traditional remedy and she died a week later at home)</p> <p>- Ba ma labari bane yar' kane nace ta haihu a gida da ta haihu a gida karfe daya na dare sai tace cikinta yana ciwo aje a gayawa iyayenta amma ba'ajeba kafin da safe sai jini ya kare mata.(It is not a story, it happened to my niece who gave birth at home and who had vaginal</p>

		bleeding) - Ni na haifeshi ne ba rai(I had a stillbirth)
Existence of a women group or any group interested in the health of mothers and newborn.	- A gaskiya babu (There are none) - Babu. (None exists) - Babu (none) - Babu wata kungiya da ta bani tallafi (none)	- A yanzu muna da wata kungiya idan za'a haihu mukan buga wa wata ungozoma waya a asibiti sai a turo mota azo a dauketa akaita can asibiti ta haihu a can. Akwai wadansu kuma idan haihuwa tazo maimakon akai matar asibiti sai su kira ma'aikatan jinya su zo gida su karbi haihuwar a gida(we have a community group that helps women in labour to the hospital or call health workers to see her at home) - A'a babu(No women group that is concerned with health of mothers)
Auto-Diagnosis - Step 2 Personal attitude of mothers and their spouse towards pregnancy, childbirth and breastfeeding.	- Yana nuna farinciki ne. (ah)(My husband expresses joy whenever I tell him that I am pregnant) - Sai yayi murna kuma yayi wa Allah godiya(He is happy and grateful to Allah when give birth) - Nima inajin dadi(I am also happy when he expresses his joy for my pregnancy) - Yaji dadi, ya godewa Allah yace Allah ya raba lafiya, Allah ya sa albarka(My husband was happy to hear the news of my pregnancy, he prayed for me to have a good birth outcome)	

	- Sai naji dadi(I felt happy)	
Communal attitude towards pregnancy, childbirth and breastfeeding.		
Auto-Diagnosis - Step 3 Personal birth stories, events or experiences of mothers during pregnancy, childbirth & breastfeeding including their actions or reactions, using pictures	<p>- Naga uwa da yar'ta. Yaron ta mai lafiya kuma tana cikin farinciki da murmushi(I see a happy/smiling mother & child)</p> <p>- Ta haihu kalau tare da jaririnta(She is fine after giving birth to her baby)</p> <p>- Alamar an haihu lafiya kuma suna cikin koshin lafiya(This drawing depicts a good birth outcome because they all look healthy)</p> <p>- Tana kula da lafiyarta kuma idan tana da matsala tana zuwa asibiti.(A healthy mother takes care of her pregnancy by going to the hospital if she has problems)</p> <p>- An samu akasin wata mata da bata haihu lafiya ba. Haihuwa daya ne na sami matsala. Don yaran baya motsi kuma naje asibiti</p>	

	<p>basu gaya mini ba. Sai akace inje a dau hoto. Lokacin mijina bayanan. Bayan na dawo sai na gaya masa sai yace ayi maganin hausa yace kada a koma asibiti. Ranar Juma'a na fara nakuda kafin masallacin juma'a har zuwa sallar magariba ban haihu ba. Nidai nasan nace zan kwanta daga nan bansan inda nake ba sai jini kawai yake zuba dan' ya rube a ciki.(I had a problem in one of the pregnancies when I was not feeling the movement of the baby. So I went to the hospital & they sent me for a scan which I could not do because my husband was not round. When my husband came back, he said I should not go back to the hospital and he gave me some traditional medicine, the following day, I started bleeding profusely because the baby had decomposed in my womb & then I collapsed/fainted.</p> <p>- Amma, da na sake samun wani cikin sai yace ba za'a sake zuwa asibiti ba.(When I got pregnant again, my husband stopped me from attending ANC in the hospital</p>	
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	<p>- Naga kamar ba a haihu lafiya ba. Na ga ranta a bace, hannuwanta a kanta alamar ba haihu lafiya ba(I can see from the drawing that the birth was not good because of her posture and sadness)</p> <p>- Ba haihu lafiya ba. Daga cikinsu daya babu lafiya, uwa ba lafiya sannan dan ma babu lafiya.(It was not a good birth, either or both the mother and child are not well)</p> <p>- A wannan hoton gashi kafa ta fito amma uban jikin yana ciki bai fitoba(This drawing is showing a foot prolapse) i.e Haihuwar Dire</p> <p>- Mai haihuwar tana zubar da jini (The shows that she is bleeding) called Zuban Jini in Hausa</p> <p>- Wannan shine mace mai ciki wadda take laulayi. (This is a drawing of a sick woman)</p> <p>- Tana zubar da ruwa i.e ruwan mahaifa (The drawing shows a woman with vaginal discharge or ruptured membranes)</p> <p>- Hoton yaro ne bashi da lafiya yana da Mayan Kwaniya (This is a</p>	
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	<p>drawing of sick skinny child)</p> <p>- Ya nuna alamar wannan yaron yana da koshin lafiya(This is a drawing of a healthy child)</p> <p>- A nace da ita wai sikila ko kuma ciwon gora(The child with this sickness is called sickler)</p>	
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Table3 a:Thematic matrix of second set of KIIs

KII id/Themes	KbKII1	KyKII1	TsKII1
Common illnesses occurring during pregnancy or child birth or breastfeeding periods and their manifestations or outcomes	<ul style="list-style-type: none"> - Ciwon nakuda ita tafi takura musu (labour pains bothers them a lot) - Akwai bangaren ciwon mara. (There is also pelvic pain) - sai kuma kaga sunzo suna fama da kuraje a gabansu (And some suffer boils on their genitals) - Sannan kuma akwai wadanda suke fama da zubar jinni. (And there are some that suffer from bleeding) 	<ul style="list-style-type: none"> - Nakuda da zubar jini Labour and bleeding during labor - Idan suna da juna biyu suna fuskantar matsalolin ciwon mara to duk da haka a yanzu ana samun afuwa. Akwai kuma yawan kumburi, kuma shi wannan kumburi a lokacin baya yakan haifar da mace ta rasa ranta. Pregnant women here often complain of pain in the pelvic area and sometimes they have swelling of the body which in the past used to result in their death 	<ul style="list-style-type: none"> - Akwai kamar hawan jini. - example include high blood pressure
Belief in the efficacy of modern, spiritual or traditional treatments for illnesses in expectant mothers	<ul style="list-style-type: none"> - farko da ta taso sai akace ko nakuda ce sai na soma wannan rubutu (In the we thought it was labour, then i "Imam" wrote some Quranic verses for her) - kasan awon cikin nan da ake zuwa yana da muhimmanci to sai aka 	<ul style="list-style-type: none"> - Suna zuwa asibiti Ana addu'a, maganin gargajiya da kuma rubutu. - Women with difficult labor are taken to hospital but some are offered prayers, holy water and traditional herbal medicine 	<ul style="list-style-type: none"> - Su kanje asibiti akan basu magani. The 'pregnant women' go to hospital and collect medicine - Mu irin na mu taimakon

KII id/Themes	KbKII1	KyKII1	TsKII1
	<p>sami sabani bata jeba. Ko ina taje a Kumbotso sai a kore ta. (You know that this ANC that women go to is important, and she did not attend. So when she was in labour and developed problems, they refuse to accept her at many facilities they went to in Kumbotso)</p>	<p>Amma da yake yanzu an sami wayewar kai ana zuwa asibti awo da kuma haihuwa abin yayi sauki</p> <p>But because of better awareness, cases of 'body swelling' in pregnant women does not result in death because they attend ANC & deliver in the hospital</p>	<p>addu'ace kawai. The type of assistance we give pregnant women is just to offer them prayers</p> <p>- In tana da ciki ana bayarwa idan tazo haihuwar ma ana bayarwa. -we offer these prayers of assistance during pregnancy or labour</p>
<p>Prevailing Perceptions in the local culture of pregnancy as mostly a normal or no risk condition</p>	<p>- To ka ga wata in ta soma in Allah ya kawo mata nakuda sai ta soma kamar yau har gobe ta na nakuda. (Some women, when Allah ordains that they start labour, she may start having labour pains from today and stretching till tomorrow before giving birth)</p> <p>- Amma wata in Allah ya kawo abin da akwai wacce ta gama tuwo nan da magariba kafin ya dawo daga sallar isha'I sai yaji kukan jariri. To irin haka akeso. (But for some if Allah ordains, after cooking the evening meal and just between the period of the evening & night</p>	<p>- Ba'a dauke mata komi sai dai idan ta kasa sai ayi idan akwai lalura. The pregnant women is not exempted from her domestic tasks unless there is an obvious 'socially' acceptable illness</p> <p>- idan mace tana da juna biyu akan rage mata aiyukan karfi amma akan so ta dan rika motsa jikinta wajen yin wanki amma tabbas duk wani aiki na karfi gaskiya akan hana ta.</p> <p>A pregnant woman in our community has some slight reduction her daily tasks especially for heavy manual work, however she is still expected to</p>	<p>Tare da yan'uwa wadda zai taimaka mata. Don wata idan ta haihu baza ta kara yin wani aiki ba sai tayi arba'in.</p> <p>- Domestic chores are taken over by a relative when a woman gives birth. Some dont do any work until after 40days</p> <p>- Idan shi wanda nauyinta yake kansa idan yaga bazai iya gaya mata ba, ya kansa wata tsohuwa ta rika fadakar da ita. - Its the responsibility to teach</p>

KII id/Themes	KbKII1	KyKII1	TsKII1
	<p>prayers 45 - 60 minutes will suffice. And the husband will come from the night prayers to meet the cries of a baby boy at home following a brief labour.)</p> <p>- Kamar yadda ka fada din a al'adarmu sai dai in ba za ta iyaba to za'a dauke mata amma idan ba hakaba ba za'a dauke mata ba sai ta haihu to fa komi yi mata za'ayi. (Like you mentioned, a pregnant woman in our community does all her household chores unless if she is ill, however after delivery, she is exempted from some household duties.....)</p>	<p>do domestic tasks such as washing clothes so as to get some exercise</p> <p>- idan mace ta haihu musamman sabon haihuwa akan dauko tshohuwa ta rika kula da ita ta rika yima ta aiki tana kuma nuna mata yadda ake renon jariri da kuma kula da kanta.</p> <p>-And when a woman newly gives birth especially for the 1st time, an elderly woman is attached to her to help her with domestic chores and teach her how to take care of her baby and herself</p>	<p>his wife how to take care of herself when pregnant or to get an elderly woman in the community to do so on his behalf</p>
<p>Perceptions about the role of change in nutritional lifestyles from local to modern diets in making pregnant women more prone to sickness</p>	<p>- cikin abubuwan da suke jawowa mace samun wahalar haihuwa misali, kamar cin zaki a lokacin da take dauke da juna biyu (Amongst the causes of ill health during pregnancy or labour are frequent consumption of sweet things during pregnancy)</p>	<p>- mu muna da abinci na musamman da yakamata mu rika amfani da shi wajen gina kanmu da iyalanmu. Muna amfani da ganyayyaki da muke dasu a gonakinmu ta musamman wadansu mutane a kauye suna barin matansu da sakaci wajen isashshen abinci</p> <p>- We have local diets made with leaves from our farms which we feed our families to build them up nutritionally, unfortunately some people are careless and dont feed their wives properly</p>	

KII id/Themes	KbKII1	KyKII1	TsKII1
		<p>- Na biyu da wani abu ya faru akaita asibiti....(yana hana mace da ta kumbura ta sami matsala)</p> <p>- secondly, promptly taking a woman in labour to the hospital</p>	
<p>Persisting local belief systems & culture about the role of destiny, spiritual and other factors in the causation of sickness during the period of pregnancy, child birth & breastfeeding</p>	<p>- Wannan abu daga Allah ne. (These "illnesses" are from Allah)</p> <p>- kamar wannan zuwan nan da suke yana taimakawa akwai kuma wadansu yan'ayoyi na alkur'ani kuma tun da abin na Allah ne to akwai Mallamin da ya bani yace idan anyi Insha Allah idan ba mukaddari bane in Allah ya yarda zata haihu lafiya. In dai tasha wannan rubutu amma kuma idan akazo da kuskuran ajaline shikenan. Wata kuma idan Allah ya yarda anayin sai kaga an haihu lafiya ko da bata je awon cikin ba</p> <p>(The ANC that they attend is good but there are also verses of the Quran which a learned man shared with me which when given to a woman in labour will facilitate it unless it is predestined that she will die - whether or not she has</p>		

KII id/Themes	KbKII1	KyKII1	TsKII1
	attended ANC)		
<p>Absence of any active local (women/community) group that is championing the health of mothers</p>	<p>- - yar'uwa haka ko uwar mijinta ko kanwarta wadda a sirance zata sameta ta gaya mata. (a female relative or her mother in-law advise a pregnant woman in confidence on how to take care of herself)</p> <p>-E, to, Alhamdulillah shigowar wannan kungiya ta'Haihuwa Lafiya' to gaskiya yanzu zaka ga jami'an wannan kungiya sukan bi gidaje sunje a tattauna ga yadda yakamata mu'amalar ta kasance ga yadda zaki kula da jaririnki, in an haihu ga yadda ya kamata yi to duk gaskiya suna bi gida-gida suanyin wannan. Don ni gaskiya matata ma tana daga cikin jami'an wanan kungiya (Well, Praise be to Allah, we currently have WG whose members go from house to house discussing how to care for mothers & newborns. In fact my wife is a member of this group)</p> <p>- To gaskiya bamu dashi. ...takarda</p>	<p>- Akwai irin mutanen da kuke kawo wa nan gidan mai unguwa (yan' kungiyar Haihuwa Lafiya) suna wayar musu da kai idan wani abu ya faru.</p> <p>- There is a WG that you brought, whose members go around to enlighten pregnant women about healthy & safe delivery</p> <p>- Yana da amfani sosai</p> <p>-It (WG) is very useful</p> <p>- Muna da ungozoma wadan da suke taimakawa. Idan abin ya gagaresu ana cewa su tafi asibiti.</p> <p>We also have TBAs who help women during labour but if it is a serious problem, they send them to hospital</p> <p>- Karin shawarar da zanyi shine ku kara wayar musu da kai, a kai- a- kai.</p>	<p>- Idan shi wanda nauyinta yake kansa idan yaga bazai iya gaya mata ba, ya kansa wata tsohuwa ta rika fadakar da ita.</p> <p>- Its the (husband's) responsibility to teach his wife how to take care of herself when pregnant or to get an elderly woman in the community to do so on his behalf</p> <p>- Babu ni dai banji labara ba. Amma suna zuwa awo a Kumbotso sai dai ba kowace mata take zuwa ba.</p> <p>- There is no group (WG) to the best of my knowledge in this town that concerns itself with creating awareness among pregnant women. But our women go to Kumbotso town</p>

KII id/Themes	KbKII1	KyKII1	TsKII1
	<p>daga masarauta na rubuta mata da jarirai da aka haifa (We don't have any form from the emirate council for recording health issues of mothers & newborns)</p> <p>-. Duk lokacin da akace yau mazajen wadannan mataye nasu saboda cigaban wannan kungiya sahale musu duk lokacin da za suje suyi taro to su basu karfin gwiwar suje (the husbands of WG members should support their wives by giving them permission to go out for raising awareness within the community)</p>	<p>My additional advise is for the WG is that they should continue to enlighten our women on a regular basis</p> <p>- Amma Alhamdulillah da yake yanzu wannan sabuwar kungiyar ‘Haihuwa Lafiya’ ta nabi gida-gida dauke da hotouna tana fadakar da mata masu ciki akan yadda zasu kula da kansu.</p> <p>- Praise be to Allah, we now have the WG which goes from house to house with pictures and enlighten pregnant women on how to take care of themselves</p>	<p>for ANC</p>

Table 3b: thematic matrix of second set of FGDs

FGD id/Themes	KbFGD1 (Women's Group Member)	KyFGD1 (Women's Group Members)
Common illnesses occurring during pregnancy or child birth or breastfeeding periods	<p>Akwai matsalar laulayi, amai, ciwon kai, ciwon ciki, zazzabi sune suke yawan takurawa mace a wannan shiyar. (The illnesses affecting pregnant women include malaise, vomiting, headache, abdominal pain are the commonest)</p> <p>- Wata ta rasu akan gwiwa. ('A woman died on her knees' whilst in labour)</p> <p>- Doguwar nakuda, jinkirin mahaifa, kan da' zai fito gangar jiki tana ciki, sai dai aje asibiti, kari ko faso. (A women in labour should just go to the hospital if she has prolonged labour, delayed passage of placenta, obstructed labour, perineal tears)</p> <p>- Zubar da jini yayin nakuda. (bleeding during labour)</p>	<p>- Zubar jini da kuma jijiga. (bleeding & fits)</p> <p>- Jijiga da zubar da jini, wasu za suce yaron ya zauna da gidinsa, wani kuma a kaikaice yake. (fits, bleeding and some say breech or malpresentation of the baby are serious problems)</p> <p>- na farko hawan jini, zubar jini wajen nakuda, jinkirin mahaifa, jijiga da zubar da ruwa.</p> <p>- 1st is high blood pressure, bleeding during labour, delayed placenta, fits and vaginal discharge</p> <p>- Zubar da jini, jijiga... suka fi</p>

FGD id/Themes	KbFGD1 (Women's Group Member)	KyFGD1 (Women's Group Members)
		<p>muhimanci</p> <p>_ Most important are bleeding & fits</p>
<p>Belief in the efficacy of modern, spiritual or traditional treatments for illnesses in mothers and newborns</p>	<p>A ra'ayina nafi so in haihu a asibiti. (If I had a choice, I will prefer to give birth in a hospital)</p> <p>A asibiti idan ka haihu za'a kwashe maka jini da ga mahaifa kuma idan akwai dan kari' za 'a gyara ka kuma yaron da ka Haifa za'a kula dashi ba kamar a gida ba kuma za'a tantance lafiyar jaririn ka. (I prefer giving birth in the hospital because they will clean the blood, stitch up any cuts, examine your baby for any health problems)</p> <p>- Ni dai anawa ra'ayin gaskiya zuwa asibiti sai dole. Za'a rika cewa kalau take za ta dorawa mijinta wahala (I prefer giving birth at home because if I go to the hospital people will say that "she is fine & just wants her husband to suffer to spend money on he)</p>	<p>- Idan abin yazo da matsala akan kira ungozoma ko kuma a kai matar asibiti.</p> <p>If there is a problem in labor, the TBA is called or the woman is taken to hospital</p> <p>- Idan ta haihu lafiya akan kira ungozoma idan kuma akwai matsala sai a tafi asibiti.</p> <p>-if the woman gives birth safely, then the TBA is called but if there is a problem, then she is taken to the hospital</p> <p>- Wasu kuma farkon fara nakuda baza su je asibiti ba har su haihu a gida sai sun galabaita sannan za'a kaisu asibiti.</p> <p>Some do not go to hospital at the onset of labour, but they delay</p>

FGD id/Themes	KbFGD1 (Women's Group Member)	KyFGD1 (Women's Group Members)
		going to hospital until things get very bad
Perceptions about the role of change in nutritional lifestyles (e.g. from local to modern diets in making pregnant women more prone to sickness, breastfeeding)		<p>- Abinci wanda zai kara gina jiki da kuma kara jini sai kuma magunguna idan mutum bashi da lafiya shima yana daya daga cikin abubuwan da zasu inganta lafiya.</p> <p>-Giving foods that strengthen the body of the pregnant woman as well as improve her blood store together with the appropriate medicines when she falls sick. These are some of the measures that can improve the health of pregnant women</p>

Table 3c: thematic matrix of second set of FGDs

FGD id/Themes	KbFGD1 (Female community members)	KyFGD1 (Female community members)	TsFGD1 (Female community members)
Common illnesses occurring during pregnancy or child birth or breastfeeding periods	<p>- Don wajen duko mabiyiya acan (asibiti) ako dauko mini. (It was in the health facility that retained the placenta was removed)</p> <p>- kamar kaga jini yana zuba idan ana nakuda to nan ma matsalace. Akwai matsala idan aka ga zubar ruwa (bleeding or vaginal discharge during labour are signs of problems)</p> <p>- Ciwon Nono. (breast pain)</p>		<p>- Akwai kumburi, ko kuma mace to rika bushewa babu jini a jikinta.</p> <p>- There are cases of body swelling or wasting due to lack of blood in their body</p> <p>- Wasu suna fama da Amai, Zazzabi da zubar da yawu, ciwon kai da kuma kasala wasu kuma laulayi.</p> <p>- Some suffer from vomiting, fever, excessive salivation, headache, malaise & illnesses</p>
Belief in the efficacy of modern, spiritual or traditional treatments for illnesses in mothers		-	<p>- Zuwa asibiti (in cuta ya tsananta).</p> <p>- Taking a sick pregnant woman to the hospital</p> <p>- (kowane muna fata ahaihu lafiya) Wata</p>

FGD id/Themes	KbFGD1 (Female community members)	KyFGD1 (Female community members)	TsFGD1 (Female community members)
			<p>haihuwa in ta kama a tafi asibiti wani lokacin mijina bashi da kudi sai kaga garin neman kudin ma sai matar ta galabaita.</p> <p>-If labour starts and my husband has no money to pay for the hospital fees, in that situation, i will suffer greatly</p>
<p>Prevailing Perceptions of pregnancy as mostly a normal or no risk condition</p>	<p>- Idan aka lura mace ta galabaita shine ake daukar ta akaita asibit aje a taimaka mata. (it is only when a pregnant woman is obviously very ill looking to everyone before she gets taken to hospital)</p> <p>- Kuma sai an haihu ake nema na. (I am only called after the woman has delivered the baby)</p>		<p>- Kamar aikin wahala. ,.....& Jike-jiken maganin gargajiya da kuma rage yin aikin wahala da kuma cin abinci mai gina jiki.</p> <p>- A pregnant woman should not do strenous work& should not take herbal concoctions, do heavy work and should eat good food that builds her strenght</p>
<p>Perceptions about the role of change in nutritional lifestyles (e.g. from local to modern diets in making pregnant women more prone to sickness, breastfeeding)</p>			<p>- Kin ga yawanci jikinsu bai saba da daukar wannan juna biyu ba. A lokacin basa samun isashshen abu mai gina jiki suci.</p> <p>- Pregnancy related problems afflict</p>

FGD id/Themes	KbFGD1 (Female community members)	KyFGD1 (Female community members)	TsFGD1 (Female community members)
			young first time mothers because their bodies are not used to pregnancy and they dont get to eat good food that will make them healthy
Absence of any active local (women/community) group that is championing the health of mothers	<p>- Akwai Allah da kuma mazajen mu. Akwai kuma yan'kungiya masu bi gida-gida suna wayar mana da kai. (Allah, husbands & women's groups conduct awareness creation for pregnant women</p> <p>- A'a ba a samu ba.(in my position as a TBA, I don't see any changes brought about by the activities of the WG</p> <p>- Da akwai abubuwan da akeyi cikin rashin sani (there are some wrong things being done in the past because of ignorance but the WG has worked to address that)</p>		<p>- Babu wani mataki sai dai kayi ta kwanciya kana watsa ruwa a kanka.</p> <p>- There is no support for pregnant women with pregnancy related complaints , they have no choice except to lie down & endure whilst pouring water on their heads</p> <p>- Anan da gaggawa dai babu wanda yake tallafa mana banda ya wuce Allah. Kuma a gaskiya babu wanda yake kawo mana dauki ko da shawara ce.</p> <p>- There is no body except Allah to help pregnant women in this community even if it is with a piece of advice</p>

FGD id/Themes	KbFGD1 (Female community members)	KyFGD1 (Female community members)	TsFGD1 (Female community members)
Changes in Self confidence/Self efficacy regarding maternal health action & organising within the community	<p>- Suna (WGs) wayar mana da kai. Suna kuma nuna mana hotuna na mata da suka haihu wadanda suka haihu lafiya da kuma wadanda suka samu matsaloli tare da jariransu. (WG create awareness amongst us; by showing us pictures of 'good & bad births'/danger signs</p> <p>- Don mu bamu taba samun wata kungiya da taba shigowa nan ta taimaka mana kamar ku.(No group like this has ever existed in our community)</p>		

Table 3d : Snapshot of thematic matrix of additional themes from second set of KIIs

KII id/Themes	KbKIII1	KyKIII1	TsKIII1
<p>Main implementation activities women's group members perceptions regarding peer-led participatory learning sessions using participatory visual methods</p> <p>Main implementation activity women's group members perceptions regarding peer-led women's group meetings</p> <p>Supporting implementation activities IGA training Women's group register of local maternal and newborn health events use of mobile phones other capacity building activities Changes in critical health literacy Critical appraisal/knowledge Realization of SDOH</p>	<ul style="list-style-type: none"> • <u>Amsa: (Local presence of women's group and activity such as peer-led participatory learning sessions)</u> E, to, Alhamdulillah shigowar wannan kungiya ta'Haihuwa Lafiya' to gaskiya yanzu zaka ga jami'an wannan kungiya sukan bi gidaje sunje a tattauna ga yadda yakamata mu'amalar ta kasance ga yadda zaki kula da jaririnki, in an haihu ga yadda ya kamata yi to duk gaskiya suna bi gida-gida suanyin wannan. Don ni gaskiya matata ma tana daga cikin jami'an wanan kungiya. Well. With the advent of this women's group, one can see their members going from house to house discussing with mothers on how to take care of themselves and their newborns. As a matter of fact, my wife is a member of the women's group (<i>Representative of the village head in Tudun Kaba</i>) • <u>Maibincike: (Local presence of women's group and advocating for community members to work closely with the women's group)</u> Allah Sarki, babu dadi. Sai kuma tambaya ta kusan karshe, bama tambaya bace kamar 	<ul style="list-style-type: none"> • <u>Maibincike: (Presence of a separate/different maternal health group (consisting of local TBAs, village head, ward head) group)</u> Akwai wata kungiya da ka taba jin labarinta anan shiyar, kungiyar mata misali da suke taro haka suke dan wayar da kawunan mata yan'uwansu wanda ya shafi ciki, haihuwa, da sauransu? Ka tabajin labarin kungiyar? <u>Amsa:</u> E, to, ko ba kungiyar idan gida yana da dan girma, akwai tsofofi da suka kware a irin wannan al'amarin da dadinsu da kuma wuyar su. Duk irin yanayin yadda mace ta shiga sun san yadda za suyi yanzu a takaice mace ta sami ciki wata daya zasu iya ganewa ta sami ciki. Well, even in the absence of a women's group; especially in large household, there will always be old experienced women who know 	<p>Absence of any women's group in Tsamawa community</p> <ul style="list-style-type: none"> • Sai kuma tambayata ta karshe akwai wata kungiya ta musamman a garin nan mai kula da mata masu juna biyu? <p><u>Amsa:</u> Babu ni dai banji labara ba. Amma suna zuwa awo a Kumbotso sai dai ba kowace mata take zuwa ba. There is no women's group; I have not heard of anyone. However, the women in our community do go to Kumbotso for their ANC visits. <i>Village head in Tsamawa</i></p>

Social action	yanzu harkar mata masu juna biyu da lafiyar su, da yadda za'a iya inganta aikin kungiya. Shawara muke nema yaya za'ayi wannan kungiyar mata naku ya'yanku, kannanku da suke wannan dawainiyar na arziki na wayar da kawuna mata junansu, yaya za'ayi a inganta aikin nasu, shine nawa shawarar da nake nema kenan daga wajen Liman da kuma wajenka?	about these things. They know the joys and pains of pregnancy, and these old women can even detect when a woman has a one month old pregnancy based on their experience. (<i>Local Barber in Kayi</i>)	
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Table 3e: Snapshot of thematic matrix of additional themes from second set of FGDs

FGD id/Themes	KbFGD1-community women	KbFGD1-women's group	KyFGD1 (women's group members)	TsFGD1 (women in community)
<p>Main implementation activities women's group members perceptions regarding peer-led participatory learning sessions using participatory visual methods</p> <p>women's group members perceptions regarding peer-led women's group meetings</p> <p>Supporting implementation activities e.g. IGA training</p> <p>Women's group register of local maternal and newborn health events</p> <p>use of mobile phones</p> <p>other capacity building activities</p> <p>Changes in critical health literacy</p> <p>Critical appraisal/knowledge</p> <p>Realization of SDOH</p> <p>Social action</p>	<ul style="list-style-type: none"> • <u>Maibincike: (Local presence of women's group and activity such as peer led participatory learning sessions)</u> <p>Su waye suke da alhakin daukar mataki kan taimakawa mata masu juna biyu a wannan shiyar?</p> <p><u>Amsa:</u> Akwai Allah da kuma mazajen mu. Akwai kuma yan'kungiya masu bi gida-gida suna wayar mana da kai</p> <p>There is Allah (supporting us) as well</p>	<ul style="list-style-type: none"> • <u>Maibincike: (Identification and discussion of some local SDOH)</u> <p>Me yasa kike son ki haihu a asibiti?</p> <p><u>Amsa:</u> A asibiti idan ka haihu za'a kwashs maka jini daga mahaifa kuma idan akwai dan kari' za 'a gyara ka kuma yaron da ka haifa za'a kula dashi ba kamar a gida ba kuma za'a tantance lafiyar jaririn ka.</p> <p>I prefer giving birth at the hospital because they will clean you up; take care of you and your baby. (<i>Women's group member, Tudun Kaba</i>).</p> <p><u>Amsa:</u> Ni dai anawa ra'ayin gaskiya zuwa asibiti sai dole. Za'a rika cewa kalau take za dorawa mijinta wahala</p>	<ul style="list-style-type: none"> • <u>Maibincike: (Local presence of women's group and activity such as peer-led participatory learning)</u> <p>Akwai kungiyoyin mata na musamman da suke taimakawa mata masu juna biyu a wannan karkarar?</p> <p><u>Amsa:</u> Gaskiya babu. Saidai wannan kungiyar haihuwa lafiya da aka kafa.</p> <p>To the best of my knowledge, there are no groups other the women's group that I am aware of in this community (<i>Women's group member, Kayi</i>)</p> <p><u>Maibincike: (Local presence of women's group and activity such as peer-led participatory learning)</u> Wane irin aiki wannan kungiyar ta</p>	<p><u>(Local absence of women's group and activities)</u></p> <p>- Akwai wasu kungiyoyi na mata a wannan shiyar? Babu.</p> <p>- Mu dai bamu da wata kungiya da take taimakawa</p> <p>There is no women's or any other group in our community</p>

	<p>as our husbands. There is also a women's group; whose members go from house to house to enlighten us about maternal health. <i>(Female community member, Tudun Kaba).</i></p>	<p>In my own opinion, going to the hospital is the last option. (If I go to the hospital for child birth), people will say "she is fine; she just wants to overburden her husband with bills". <i>(Women's group member, Tudun Kaba)</i></p>	<p>keyi? <u>Amsa:</u> Taimako da wayar da kan mata. The women's group help and enlighten women in the community <i>(Women's group member, Kayi).</i></p>	<p>that provides assistance /support(for maternal health issues) <i>Female community member, Tsamawa</i></p>
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Table 3f: Thematic matrix for stories of significant change

Story id/Domains	Sub-Domains	KbMSC1	KyMSC1
a) Changes in Health Literacy			
	1. Awareness/Knowledge of danger signs and referrals for mothers and newborns (Cognitive Skills/Knowledge Appraisal)	- the community sessions, peer-led participatory learning sessions on maternal and neonatal danger signs gotten from the facilitators and women group in the community is making some women to now understand the importance of going to the hospital when they have problem	<p>"I also knew a woman that was pregnant and has been swelling (kumburi) and sick. "I paid a visit to her after her delivery (and on) seeing her in that (bad) condition, then I advised her to go to hospital and see a doctor for her condition and she went".</p> <p>-One day, en route to a community/outreach session, we saw a baby with dry skin, her eyes (was) white (and it) seems she was short of blood, I asked the mother - did you take her to the hospital (and) she said no but they make use of local herbs. She now advised (her) to go to hospital and she agreed to take the baby to Asiya Bayero (paediatric hospital) for check up</p>
	2. Self Confidence in referring or escorting community members to health facility (Social	- the peer-led women's group voluntarily assigned and supported one of the group members to take her (Bilkisu-a community member)	The women group have understand all the danger signs in pregnant mothers before and after delivery. Because they can view a pregnant mother with different kind of

	Skills/self efficacy)	back to the hospital for the second time to get treatment for her mastitis	condition related to health and know if (she has) a 'danger sign'
	3. Capacity for supporting mother and newborn (Collective organising & action)	<p>- One of the twins (baby Hassana) was collected for fostering by the WG leader in (the) person of Malama Jamila, she said "I am happy to be a mother to Hassana (one of the twins) because she sympathise with the difficulties the baby is undergoing because of what she is being fed (Custard and powder milk) within 1 month of birth. This diet of Custard & powdered cow milk makes her constipated and she always has difficulty when passing stool"</p> <p>- the women group voluntarily assigned and supported one of the group members to take her (Bilkisu) back to the hospital for the second time to get treatment for her mastitis</p>	<p>- She was pregnant for the 1st time and was in labour for 3 days (but) she was not taken to the hospital. It was the elders of the house that reviewed her and said she was not due for delivery. (So) she was still kept in that situation for 7 days until when the head of the baby pushed out. They then decided to call a TBA called (Kaga ta kowa) who had attended one of "our" community sessions.</p> <p>It was the TBA that advised them to take her to the hospital. After examination in the hospital, it was discovered that the placenta (had) wrapped (itself) around the baby. She was then operated and the baby died and the mother suffered a lot.</p>

Acronyms used in the thematic matrix

SN	Data Sources	Acronym	Meaning
1.	FGDS	KbFGD1	FGD with women's group members in Tudun Kaba community
		KyFGD1	FGD with women's group members in Kayi community
		KbFGD2	FGD with non members of women's group in Tudun Kaba community
		KyFGD1	FGD with non members of women's group in Kayi community
		TsFGD1	FGD with non members of women's group in Tsamawa community
2	KIIs	KbKII1	KII with maternal health gatekeepers in Tudun Kaba community
		KyKII 1	KII with maternal health gatekeepers in Kayi community
		TsKII1	KII with maternal health gatekeepers in Tsamawa community

Acronyms used in thematic matrix

SN	Data Sources	Acronym	Meaning
1.	MSC Stories (Stories of Significant Change)	KbMSC1	Story of significant change from women's group member in Tudun Kaba community
		KyMSC1	Story of significant change from women's group member in Kayi community

Table 3g: Excerpts from transcripts of peer-led women's group meetings from Kayi and Tudun Kaba communities

Serial Number	Theme	Kayi (Peri-urban)	Tudun Kaba (Rural)
1	Capacity building/ conscientization	<ul style="list-style-type: none"> - Discussions about the death of a neighbour whilst giving birth in a hospital - Discussions about common ailments/conditions during pregnancy - Discussions about ailments/conditions/deaths amongst newborns 	<ul style="list-style-type: none"> - Strengthening of skills needed for conducting peer-led participatory learning sessions, identification of maternal and newborn danger signs during outreach
2	Capacity building/creating awareness	<ul style="list-style-type: none"> - Discussions about how to use phones and whatsapp for women's group activities as well as for transmitting information about maternal & newborn health events - Discussions about how to set up a self help/thrift group that can help us when we fall sick during pregnancy or birth 	<ul style="list-style-type: none"> - Willingness by group members to attend meetings and enlighten women on danger signs
3	Capacity building/health education	<ul style="list-style-type: none"> - Strengthening of skills needed for conducting peer-led participatory learning sessions, identification of maternal and newborn danger signs during community sessions 	<ul style="list-style-type: none"> - Discussions regarding resistance in allowing mothers to attend health facilities (ANC) and local solutions
4		<ul style="list-style-type: none"> - Willingness to attend meetings and provide enlightenment on danger signs 	<ul style="list-style-type: none"> - Consequences of refusal to allow mothers to attend health facilities e.g. fits
5		<ul style="list-style-type: none"> - Discussions on income generating activities at household level to reduce poverty (e.g. preparing local perfumes like humra) 	<ul style="list-style-type: none"> - Discussions about use of traditional herbs in pregnancy - Giving birth at home due to poverty (cannot afford hospital bills) and harassment by hospital staff
6		<ul style="list-style-type: none"> - Discussions about a pregnant woman from their community who was operated on in the hospital to get her baby out 	<ul style="list-style-type: none"> - Promotion of income generating activities at household level to reduce poverty

Appendix V : Outline of statistics obtained from project records

Table 1a: Women's group register of maternal and newborn health events in Kayi community

Important events affecting mothers & newborns in their communities as reported by women's group members in Kayi community										
SN	Events in Mothers	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	March 2017	April 2017	May 2017	Total
1	Death of a woman during pregnancy, delivery or after delivery (puerperium) this month	0	3	2	1	2	0	0	0	8
2	Illness of a woman during pregnancy, giving birth or after birth (puerperium) that was severe enough to cause an outpatient visit to a health facility this month	2	7	0	0	2	0	2	0	13
3	Illness of a woman during pregnancy, giving birth or after birth (puerperium) that was severe enough to cause admission into a health facility this month	0	11	0	0	2	0	2	0	15

4	Number of women who gave birth at home this month	2	10	5	7	8	10	7	1	50
5	Number of women who gave birth at health facility this month	4	7	0	0	0	2	2	0	15
6	Number of women who gave birth at the house of the community TBA this month	0	0	0	0	0	0	0	0	0
	Total									
	Events in Newborns	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	March 2017	April 2017	May 2017	
1	Any stillbirth delivered in the community this month	0	9	4	2	3	0	0	0	18
2	Any newborn with birth defects delivered in the community this month	0	0	2	1	2	0	0	0	5
3	Any preterm newborn delivered in the community this month	0	0	0	0	0	0	1	0	1
4	Any newborn that died within 40 days of birth in the community this month	0	0	0	1	3	0	0	0	4
5	Any newborn who had an illness that was severe enough to cause an outpatient visit to a health facility in this month	0	0	0	2	0	1	0	1	4

6	Any newborn who had an illness that was severe enough to cause admission into a health facility in this month	0	0	0	2	0	0	0	0	2
	WG Activities That Are Related to Health of Mothers and Newborns									
1	Number of WG Meetings Held this month	2	2	1	2	2	2	1	2	14
2	Number of outreaches conducted by WGs this month	2	1	1	0	1	1	1	1	8
3	Minutes of Report Available									8
4	Average Attendance at women's group meetings									11
5	Number of Stories of Significant Change									4
6	Number of Income Generating Activities Training Conducted (Vaseline and Humra)									2

Table 1b: Women's group register of maternal and newborn health events & outline of other research project documents in Tudun Kaba community

Important events affecting mothers & newborns in their communities as reported by women's group members in Tudun Kaba community										
SN	Events in Mothers	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	March 2017	April 2017	May 2017	Total
1	Death of a woman during pregnancy, delivery or after delivery (puerperium) this month	2	0	0	0	0	0	0	0	2
2	Illness of a woman during pregnancy, giving birth or after birth (puerperium) that was severe enough to cause an outpatient visit to a health facility this month	0	0	1	1	0	0	0	2	4
3	Illness of a woman during pregnancy, giving birth or after birth (puerperium) that was severe enough to cause admission into a health facility this month	1	0	0	0	0	0	0	0	1
4	Number of women who gave birth at home this month	6	3	1	1	2	2	3	2	20
5	Number of women who gave birth at health facility this month	1	1	0	0	0	0	0	0	2
6	Number of women who gave birth at the	0	0	0	0	0	0	0	0	0

	house of the community TBA this month									
	Events in Newborns	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	March 2017	April 2017	May 2017	Total
1	Any stillbirth delivered in the community this month	7	1	0	0	1	2	0	0	11
2	Any newborn with birth defects delivered in the community this month	0	0	0	0	0	0	0	0	0
3	Any preterm newborn delivered in the community this month	0	0	0	0	0	0	0	0	0
4	Any newborn that died within 40 days of birth in the community this month	0	0	0	0	1	2	0	0	3
5	Any newborn who had an illness that was severe enough to cause an outpatient visit to a health facility in this month	0	0	0	0	0	0	0	0	0
6	Any newborn who had an illness that was severe enough to cause admission into a health facility in this month	0	0	0	0	0	0	0	0	0
	WG Activities That Are Related to Health of Mothers and Newborns									
1	Number of WG Meetings Held this	1	1	1	1	1	2	0	2	9

	month									
2	Number of outreaches conducted by WGs this month	1	1	0	0	1	1	1	2	7
3	Number of Reports for WG Meetings Available									4
4	Average Attendance at WG meetings									11
5	Number of Stories of Significant Change									3
6	Number of Income Generating Training Conducted (Vaseline and Humra)									2

Appendix VI : Templates of project data collection tools and guides

A) Auto-Diagnosis Session Guides

Introduction

The auto-diagnosis is a qualitative research process in which women's groups in selected communities explore their maternal and neonatal health problems. It is an ongoing activity that allows the community and the female facilitators to learn about how women perceive these problems and how they respond to them. This auto-diagnosis activity used in this process draws on basic concepts of facilitating the exploration of experiences, attitudes and practices of members of women groups.

Remember that in the auto-diagnosis there are no "right answers", we are interested only what the women themselves believe and understand. In addition to raising women's awareness of specific maternal and neonatal health problems, a major goal of the process is to foster the women's confidence, in their ability to to produce information based on their experiences as well as gather information from their neighbours about topics that concern the community and to learn to prioritize the problems that are identified.

The auto-diagnosis can be carried out over a period of nine months and consist of ten steps divided into four women's group sessions of approximately 2 to 3 hours each, this will be adapted for developing a maternal health literacy intervention package during this research.

Specific Objectives For Women's Group Members

Define, identify and recognize common health issues and problems affecting mothers and their newborn at the community level

Increase women's awareness of and motivation to act upon health problems affecting mothers and their newborn at the community level; and,

Prioritize health problems affecting mothers and their newborn as identified by the women in the community. The selected problems should be such that they are able to be addressed at the community level

Specific Objectives For The Female Facilitators of The Women's Groups

Gain a better understanding of whether, how and why women attend to their health care needs and that of their newborn child.

Obtain information for developing a basis for planning the maternal health literacy interventions which will be implemented during the duration of the fieldwork.

Combined Objectives For The Female Facilitators And The Women's Groups Members

Explore and generate ideas about the health problems affecting mothers and their new-borns in the community and develop trust and confidence between the facilitators and the communities.

Work together with the women groups to develop, implement and evaluate a maternal health literacy intervention package

FIRST SESSION

STEP 1:

Orient the members of the women groups to the Maternal Health Literacy Intervention Project - MHLIP (Haihuwa Lafiya Project)

PURPOSE:

For the women group members to understand what the Maternal Health Literacy Intervention Project - MHLIP (**Haihuwa Lafiya Project**) is and for them to be invited to participate in the project.

METHOD:

- a.** By using the questions in the activities below to start and share a discussion on the experiences of the women group members regarding the period during pregnancy, child birth or 6 weeks after childbirth within their community and adjacent community
- b.** The facilitator shares with the group a story of the maternal danger signs that women commonly come with to the Comprehensive Health Centre Kumbotso from surrounding communities during pregnancy, child birth or 6 weeks after childbirth.

ACTIVITIES:

1. The facilitator asks the group:
 - a. Within the last 1 - 2 years, in this or the neighbouring communities, do you know of any women who have died during pregnancy, child birth or 6 weeks after childbirth?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

- b. Within the last 12 months, in this or the neighbouring communities, do you know of any babies who died at birth or during their first month of life?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

2. Brief description by the facilitator about the maternal danger signs that women come with at the Comprehensive Health Centre, Kumbotso during pregnancy, child birth or 6 weeks after childbirth based on the experience of the matron of the Health Centre (using the leaflet, drawings, photos or slides).

The facilitator asks the group: Have you ever heard of the MHLIP (**Haihuwa Lafiya**) Project? What is the **Haihuwa Lafiya** project? What do you think the **Haihuwa Lafiya** Project should be? Is there any similar project in the community or in the neighbouring communities? What do the members of the women groups expect from the MHLIP (**Haihuwa Lafiya**) Project?

3. Then the facilitator gives a brief presentation of the MHLIP (**Haihuwa Lafiya**) Project objectives.
4. The facilitator allows for questions and answers through-out the session.

NB: Please refer women group members with questions related to medical conditions to the female medical personnel based at the Comprehensive Health Centre Kumbotso.

Approximate Time: 2 hours

STEP TWO

Explore the group members' attitudes regarding their practices during pregnancy, birth and puerperium in this community

Purpose: To know what women think about pregnancy, birth and puerperium

Method:

Use of drawings and pictures accompanied by questions to stimulate group discussion and reflection.

Knowledge of the facilitator:

- Community's terminology e.g. language

- Know the women's group

- Know the subject

- Know some of the community's traditions and customs

Materials/Supplies required:

- Drawings of an unhappy pregnant women and a happy pregnant woman

- Question guide

- Tape recorder or observer/recorder

- Materials for an icebreaker exercise

Possible barriers:

- Language

- Lack of knowledge about the subject

- Do not know the terminology

- Lack of motivation by the group

Facilitator lacks experience

Activities:

1. The facilitator shows the drawing of the happy pregnant woman and asks the group. 'What do we see in this picture?' The group responds with what they see. Then facilitator 'Why is the woman happy?'

2. The facilitator shows the drawing of the unhappy pregnant woman and asks the group, "What do you see in this picture?", "Why is the woman sad?"

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

3. Discussion questions: How do you feel when you're pregnant? What do you think when you suspect that you're pregnant? Why? How does your husband react when he finds out that you're pregnant? During the pregnancy? During the delivery? After the birth? With the newborn baby? How do you react to your husband's response?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

4. Brief explanation of what the group will do during the next meeting.

Time: Approximately 1 hour

NB: Please refer women group members with questions related to medical conditions to the female medical personnel based at the Comprehensive Health Centre Kumbotso.

STEP THREE

Learn about what women groups members do about health problems of mothers and newborns in this community

Purpose:

To identify and know about the health problems of mothers and newborns, and to standardize the local terms used to describe these problems within the group.

Method:

Use of role play/stories, drawing games, questions and group discussion.

Activities:

1. The facilitator can ask the group members each about their stories of pregnancy and giving birth including their experiences after delivering their babies.

Questions to ask when the women are telling their stories about pregnancy, delivery and after delivery

Pregnancy

- How do you know that you're pregnant?
- What do you eat when you're pregnant?
- How do you take care of yourself when you're pregnant (drugs, herbs, work, hygiene, etc.)?
- Who do you see when you're pregnant? (Doctor, nurse, mother, wanzami, TBA etc.)?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

Birth/Delivery

- What things do you get ready for the birth?
- Who attends the birth?
- How do you know when you are going to give birth?
- How do you deliver the baby (position, birth place, materials)?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

After delivering the baby (Jego)

- How does the placenta come out? In how much time after the birth does the placenta come out?
- If it doesn't come out, what do you do? What do you do with the placenta when it comes out?

- How do you take care of yourself after the birth? (hygiene, diet, rest)?

- When do you get out of bed?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

Newborn

- What do you do when the baby is born? (mucous, crying, swaddling, drying, cutting the cord)?
- When, with what and how do you cut the umbilical cord?
- After how much time do you put the baby to the breast?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

3. Develop a "Dictionary of Local Terms" after conducting the following activities.

- The facilitator asks the group what problems affecting mothers and newborns have the women heard of?
- Each member of the group gives an answer and the facilitator gives the respondent the drawing that represents her response until all of the drawings are distributed.

Use the following "Picture Card game" to conduct the activity -

- Each of the women selects from the set of drawings (without seeing what it is when she selects it) and then describes the problem represented by the picture.
- Put all of the drawings on the floor and let the women select one that attracts her attention.
- She then tells the group what problem is represented.

Then the facilitator asks the following questions related to the problems

Pregnancy and Labor/Delivery

What problems do women experience during pregnancy/labor and delivery?

What is the problem called in this community

Does it occur in this community?

Why does this problem occur?

How do you treat it?

If you don't treat it, what happens?

After delivering the baby (jego) and Newborn

-What problems do women/newborns experience within one month after the birth?

-What is the problem called in this community?

-Does it occur in this community?

-Why does this problem occur?

-How do you treat it?

-If you don't treat it, what happens?

NB: To document this step, the observer/recorder can use the following chart:

Problem	What is It called (local terminology)?	What causes the problem?	How is It treated?	If you don't treat it, what happens?	Does it occur here?

Approximate Time: 3 hours

NB: Please refer women group members with questions related to medical conditions to the female medical personnel based at the Comprehensive Health Centre Kumbotso.

STEP 4

Encourage group members to think about what other women in the community know and do in relation to maternal and neonatal health problems.

Purpose

Prepare the women group members to think about the problems of other women in their community and encourage the curiosity of the women group members to know what other women in the community think about things related to haihuwa lafiya (maternal health literacy project).

Method

Group discussion and questions.

Activity

The facilitator asks the group:

1. Do we think that other women in the community have the same problems and experiences during pregnancy, birth and after birth that we in the women group have or discussed?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

2. How can we find out? (Discussion about ways to get more information- e.g. through interviews, house visits etc.)

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

Approximate Time: 15 minutes

SESSION 3

STEP 5

Explore and design different ways to collect information about haihuwa lafiya from other women in the community.

Purpose

To identify strategies or ways of collecting information from other women in the community about local maternal and neonatal health experiences and problems, select an information collection method that is appropriate to the needs of the women group for providing/collecting information from other women in the community, develop the materials and methods for collecting this information about maternal and neonatal health from other women in the community, and practice the methodology.

Method

Discuss with the women group members about the various ways of collecting information from other women in the community about local maternal and neonatal health experiences and problems, develop the method that the women group members chooses, and demonstrate it through demonstration, drama or role play and practice in pairs using the methodology selected.

Activities

1. The facilitator asks the group: What Information maternal and neonatal health do we need from women in the community? How can we collect this information about maternal and neonatal health from other women in the community? What material can help us to collect this information? How are we going to record the information about maternal and neonatal health so that we don't forget the answers?

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

2. The women group discusses the options in materials and methodology for collecting information about haihuwa lafiya and selects the most appropriate methodology and material for their community.

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

3. The women group members selects some volunteers from their group members to present a drama, role play or demonstration showing how to implement the selected strategy or method. The other members discuss how to improve the process based on the presentation.

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

4. The group divides into pairs and the women practice the interviews. One woman plays the role of the interviewer and the other the interviewee. Then they change roles. The women practice until they feel comfortable carrying out the interview.

Then probe further by asking

- **WHY, WHERE, WHAT, WHEN**

Approximate Time: 2 hours

B) FGD Guide I

GUIDE FOR FOCUS GROUP DISCUSSIONS (FGDS) WITH FEMALE COMMUNITY MEMBERS

RUBUTACCEN TSARIN DA ZA'AYI AMFANI DASHI WURIN YIN TAMBAYOYI WA MATA A WANNAN SHIYAR

Tsarin Tambayoyin Da Za'ayi Wa Mata Dake Zama A Wannan Shiyar. Za'a Gabatar Da Wannan Tambayoyin A Farko Da Karshen Wannan Binciken Da Za Ayi Game Da Lafiyar Mata Masu Juna Biyu A Wannan Karkarar

Introduction: My name is (*Name of the interviewer*). I am a PhD Research Student/Research Assistant working on a doctoral research under the auspices of ScHARR, University of Sheffield, United Kingdom. I am administering this FGD guide as part of a health literacy research we are conducting in order to improve maternal health in this community. I will be administering this FGD guide to women from your village and its surroundings that consent to participate in the FGD at the following proposed villages namely Gaida, Kumbotso, Rigafada and Tudun Kaba of Kumbotso LGA, Kano State. Examples of participants that will be invited to this focus group discussion where this FGD guide will be used include female adolescents, adult and elderly women in the community.

Gabatarwa: Sunana **Sanusi Abubakar**, ni likita ne (a asibitin Mallam Aminu Kano) kuma dalibi dake karatun digiri na koli (wanda ake ce da shi PhD) a karkashin jami'ar Sheffield dake kasar Turai. Zan gabatar maku da wannan tsarin tambayoyin a matsayin ku na mata da suke zama a wannan shiyar a cikin binciken wayarda kawunan mata a game da hanyoyin inganta lafiyarsu da ake so a gabatar a wannan shiyar. Amma kafin in fara yi maku tambayoyi, ina bukatar in sami izini da aminicewar ku da kuma bada hadin kai da wannan

wayarda kai da muke so muyi. Misallin wanda ake yi musu shigen irin wannan tambayoyi sun hada da mata mazaunar shiyoyin Gaida, Rigafada, Tudun Kaba da Kumbotso. Kuma ana sn aji daga bakin mata matasa zuwa mata dattawa.

Confidentiality and consent: I am going to ask questions about maternal health in this community, some of which may be very personal. Your answers are completely confidential. Your names will never be used in connection with any of the information you tell me. You may need to know that this exercise is taking place with other women groups in this local government area (LGA) as well. I would greatly appreciate your help in responding to this interview

Amincewa da izini: Zan yi muku tambayoyi game da abubuwan da suka shafi lafiyar mata wanda nake bukatar kuyi mani jawabi cikarkiya na ra'ayoyin ku saboda a iya inganta shi lafiyar mata masu juna biyu. Amma ina tabbatar muku da cewa baza a fadi sunnan ku ba ko a lakanta muku wannan zancen in baku bukaci ayi haka. Ina son kuma in sannar muku da cewa ana chan ana yi wa sauran yan kungiyoyin mata kaman ku irin wannan tambayoyin a wannan karkarar. Mungode da ku ka saurare mu kuma da ku ka bamu hadin kai

Date (Kwannan Wata)/Time (Lokaci)_____

Moderator/Note taker(Mai Daukan
Bayani)_____

Location(Wurin Ganawa)_____

Address (Addreshin Wurin
Taro)_____

Local Maternal Health Practices & Health Literacy Status (Abubuwan Da Suka Shafi Lafiyar Mata Da Ilimin Su Game Da lafiyar su)

When was your last pregnancy or confinement? What were your experiences during your last pregnancy and delivery? What did you do to ensure that you had a healthy pregnancy and childbirth? Who supported you in ensuring you had a normal pregnancy and delivery? How did they support you? What are examples of the things that you know or have heard that can go wrong during labour? Are there examples of anything that will generally make a mother suspect that she is not undergoing labour normally? Who makes the decision of where to go or what to do if anything goes wrong during labour in this community? Who do the community members usually first turn to if anything goes wrong during labour or pregnancy and why?

Tun yausha ne rabonku da haihuwa? Menene kuka fuskanta a lokacin da kuke da ciki ko da ka suka zo haifuwa? Wani mata kai ne ku ka dauka a lokacin da ku ke da ciki saboda ku tabbatar da kun zauna a cikin koshin lafiya? Wanene ya tallafa maku a lokacin da kuke da ciki saboda ku sami koshin lafiya? Ta wani hanyoyi ne aka tallafa maku? Wane matsaloli ne za su iya samun mace a lokacin da take nakuda? Menene mace za ta gani a lokacin da take nakuda da zai zaburar da ita ta san cewa akwai matsala atare da wannan haifuwar? Wanene yake da ikon yanke shawarar inda za a kai mace da ta samu matsala a lokacin haifuwa? Wanene ake fara kira in an fahimci cewar akwai matsalar haifuwa tare da mace mai ciki ko nakuda? A wani mata kai za'a a kai mace mai matsalar haifuwa wajen unguwar zoma ko mai aikin lafiya?

How can pregnancy and childbirth be made safer for mothers in this community?

What should be done and by whom to make pregnancy and childbirth safer for mothers in this community?

Wani hanyoyi ne za'a iya inganta lafiyar mata masu ciki ko kuma wanda suka zo nakuda a wannan shiyar? Su waye ne suke da alhakin daukar matakan taimaka wa mata masu juna biyu a wannan shiyar? Kuma su waye suke da damar yin haka?

Are there any women's group that are working to improve the health of mothers in this community? If yes, who are its members? What kind of activities do they do? Has their activities contributed in making pregnancy & child birth safer in this community?

Akwai kungiyoyin mata na musamman da suke taimaka masu juna biyu a wannan shiyar? In akwai, su waye ya'yan kungiyar? Wani irin ayyuka suke yi? Aikin su yana tasiri wajen taimaka wa mata masu juna biyu a wannan shiyar?

Has the (community) culture towards the health of pregnant mothers changed over the past two years in your community? If yes, what are the specific examples of the most important changes in your opinion? Were there any unanticipated benefits or challenges to the health of mothers in your community in the past two years?

Akwai wani chanji a yadda ake kallon matsalolin lafiyar mata masu juna biyu acikin shekaru biyu da suka wuce ko kuma babu wani chanji a wannan shiyar? In akwai wani chanji, a bada misalign mafi mahimmancin acikinsu.

Attendance Sheet for Respondents (Wanda suka halarci wannan tattaunawa)

S/N	Names	Age	Marital Status	Parity Adadin	Educational status	Ethnic group	Religion	Occupation
-----	-------	-----	----------------	---------------	--------------------	--------------	----------	------------

Lamba	Sunaye	Shekaru	Matan Aure ko Bazawara ko Budurwa	Yaran Ki	Matakin Karatu	Kabila	Addini	Sana'a
1								
2								
3								
4								

Thank you for attending and participating

Mungode Da Zuwa Da Kuma Hadin Kai Da Aka Bamu

C) FGD GUIDE II

GUIDE FOR FOCUS GROUP DISCUSSIONS (FGDS) WITH WOMEN'S GROUPS MEMBERS IN THE COMMUNITY

RUBUTACCEN TSARIN DA ZA'AYI AMFANI DASHI WURIN YIN TAMBAYOYI WA KUNGIYOYIN MATA A WANNAN SHIYAR

Tsarin Tambayoyin Da Za'ayi Wa Kungiyoyin Mata Masu Ta'amali A Harkar Abubuwan Da Suka Shafi Lafiyar Mata Masu Juna Biyu Ko Shayarwa A Wannan Shiyar. Za'a Gabatar Da Wannan Tambayoyin A Farko Da Karshen Wannan Binciken Da Za Ayi Game Da Lafiyar Mata Masu Juna Biyu A Wannan Karkarar

Introduction: My name is (*Name of the interviewer*). I am a PhD Research Student/Research Assistant working on a doctoral research under the auspices of SchARR, University of Sheffield, United Kingdom. I am administering this FGD guide as part of a health literacy research I am conducting in order to improve maternal health in this community. I will be administering this FGD guide to members of women groups (such as Muslim Women Groups, HIV/AIDS Support Groups, Community Based Organizations, Local Agric or Trade Cooperatives, Village Development Committee etc) from your village and its surroundings that consent to participate in the FGD at the following proposed villages namely Gaida, Kumbotso, Rigafada and Tudun Kaba of Kumbotso LGA, Kano State. Examples of participants like you that will be invited to this focus group discussion where this FGD guide will be used include members of women groups (such as Muslim Women Groups, HIV/AIDS Support Groups, Community Based Organizations, Local Agric or Trade Cooperatives, Village Development Committee etc) in the community.

Gabatarwa: Sunana **Sanusi Abubakar**, ni likita ne (a asibitin Mallam Aminu Kano) kuma dalibi dake karatun digiri na koli (wanda ake ce da shi PhD) a karkashin jami'ar Sheffield dake kasar Turai. Zan gabatar maku da wannan tsarin tambayoyin a matsayin ku na ya'yan kungiyar mata da suke ta'amali da harkokin da suka shafi mata ko lafiyar mata masu juna biyu a wannan shiyar a cikin binciken wayarda kawunan mata a game da hanyoyin inganta lafiyarsu da ake so a gabatar a wannan shiyar. Amma kafin in fara yi maku tambayoyi, ina bukatar in sami izini da aminicewar ku da kuma bada hadin kai da wannan wayarda kai da muke so muyi. Misallin wanda ake yi musu shigen irin wannan tambayoyi sun hada da yan kungiyar mata masu agaza wa addinin musulunci, yan kungiyar mata masu kasuwanci, yan kungiyar mata masu kishin raya shiyarsu, yan kungiyar mata yan agaji ko da'awah, da kungiyar unguwar zoma (da sauran su)

Confidentiality and consent: I am going to ask questions about maternal health in this community, some of which may be very personal. Your answers are completely confidential. Your names will never be used in connection with any of the information you tell me. You may need to know that this exercise is taking place with other women groups in this local government area (LGA) as well. I would greatly appreciate your help in responding to this interview

Amincewa da izini: Zan yi muku tambayoyi game da abubuwan da suka shafi lafiyar mata wanda nake bukatar kuyi mani jawabi cikarkiyya na ra'ayoyin ku saboda a iya inganta shi lafiyar mata masu juna biyu. Amma ina tabbatar muku da cewa baza a fadi sunnan ku ba ko a lakanta muku wannan zancen in baku bukaci ayi haka. Ina son kuma in sannar muku da cewa ana chan ana yi wa sauran yan kungiyoyin mata kaman ku irin wannan tambayoyin a wannan karkarar. Mungode da ku ka saurare mu kuma da ku ka bamu hadin kai

Date (Kwannan Wata)/Time (Lokaci)_____

Moderator/Note

taker(Mai

Daukan

Bayani)_____

Location(Wurin Ganawa)_____

Address (Addreshin Wurin Taro)_____

Local Maternal Health Situation (Yanayin Lafiyar Mata Masu Ciki A Wannan Shiyar)

What are the commonest health conditions that affect pregnant mothers in your community? Why do you think these health conditions occur commonly among mothers in your community? Who amongst these pregnant mothers are most affected by these common health conditions and why? How do you or community members handle these mentioned common conditions afflicting pregnant mothers if they happen to be faced by such a situation? The last time you or another community member was faced with such a mentioned common health condition in a pregnant mother, what did you do?

Menene matsalolin lafiya da suka fi addabar mata masu juna biyu a wannan shiyar? Za ka iya ambatar kamar guda biyar? A ganinka me yasa wannan matsalolin da ka ambata suka fi damun mata masu juna biyu a wannan shiyar? Su waye a cikin mata masu juna biyu wannan matsalolin suka fi damu a wannan shiyar kuma me yasa? Wani mata kai ne ake dauka a wannan shiyar in aka fuskanci wannan matsalolin? A baya da kai ko kuma wani a wannan shiyar ya gamu da irin wannan matsalar, wani mataki ya dauka?

What other conditions are important to the health of mothers in your community? Can you give us examples of these other important health conditions that affect the health of mothers and why they are important in your opinion? Which mothers are most

affected by these mentioned health conditions and why? How will someone like you cope or handle these mentioned health conditions that affect mothers if you happened to be faced by them? How do other community members cope with these conditions that affect the health of women? The last time you or another community member was faced with such a condition that was affecting the health of a pregnant mother in the village, what did you do?

Menene matsalolin lafiyar mata masu juna biyu da aka fi dauka ko gani da mahimmanci a wannan shiyar? A bani misalinsu da kuma dalilai da yasa ake daukansu da mahimanci a ra'ayin ka. A cikin wani mata masu juna biyu ne aka fi samun irin wannan matsalolina wannan shiyar kuma me yasa? Wani mata kai ne ake dauka a wannan shiyar in aka fuskanci wannan matsalolinna mata masu juna biyu? A baya da kai ko kuma wani a wannan shiyar ya gamu da makamancin wannan matsalar na mace mai juna biyu, wani mataki ya dauka?

What tasks or activities should a mother be expected to refrain from doing in this community during pregnancy and why? What foods, tasks or activities would a mother be encouraged to do during pregnancy in this community and why? (Probe for different periods of pregnancy e.g. before birth, birth & after delivery). What will you regard as a good birth in this community and why? Where should a mother go to get a good birth and why? What will you regard as a difficult birth and why? How will you ensure a good birth and avoid a difficult birth for a pregnant mother in your community? What should a mother do after giving birth to ensure the baby and mothers do well? Where did you or your wives (co-wives) deliver your last five babies?

Menene ake gani bai dace ba mace tayi in tana da juna biyu a wannan shiyar? Wani irin abinci ko aiki ne aka fi son mace mai ciki ta jibinta dashi a wannan shiyar? (ko a

lokacin haihuwa/nakuda, jecho ko shayarwa). A ra'ayin ka, wani irin haihuwa ko jecho ne mace za ta fi sha'awa in da za a bata zabi kuma menene dalilin ka na fadin haka? Ina ne yafi dacewa mace ta je saboda ta samu irin haihuwa ko jecho da ta ke sha'awa kuma menene dalilan ka? A ra'ayinka, wani irin haihuwa ne zaka ce ya wahalar da mace mai ciki kuma menene dalilan ka? Wani mata kai ne zaka iya dauka saboda ka taimaka wa mace mai juna biyu ta samu ta haihu cikin sauki ba tare da matsala ba a wannan shiyar? Me ya kamata mata masu jecho suyi wa jariransu da kuma kawunansu saboda su samu karin lafiya bayan su haihu? Ina ke ko kishiyoyin ki kuka haifi ya'yan kun a baya?

Have you heard about any woman that was very sick during pregnancy, child birth or after delivery in your community in the last year? What do you think caused her sickness and what happened to her before she got very sick? How did her family or community members assist her before and after she got very sick? Who were the people involved in helping her to get better before and after she got sick?

Kun taba jin labarin wata wanda tayi rashin lafiya ko laulayi mai tsanani a lokacin da take da ciki ko da ta zo haihuwa ko bayan haihuwa a wannan shiyar? A tunanin ku, menene ya yi sanadin wannan rashin lafiyar ko laulayi mai tsanani? Kuma me ya same ta da tayi wannan rashin lafiyar ko laulayi mai tsanani? Wani mata kai ne mijin ta ko mutanen gari suka dauka saboda su taimaka mata kafin rashin lafiya ko bayan da rashin lafiyar ya kama ta? Banda su, akwai wasu da suka taimake ta a lokacin da bata da lafiya?

Have you heard or do you know about any woman that died during pregnancy, child birth or after delivery in your community in the last year? What do you think caused her death and what happened to her before she died? How did her family or

community members assist her before she died? Who were the people involved in helping her to get better before she died?

Kuna da labarin mace mai juna biyu da ta rasu saboda dalilin laulayin ciki mai tsanani ko wajen haihuwa ko bayan an haihu a shekarar da ta gabata a wannan shiyar? Menene yayi sanadin rasuwar na wannan mace mai juna biyu? Wani matakai ne mijin ta ko mutanen gari suka dauka saboda su taimaka mata kafin ta rasu? Banda su, akwai wasu da suka taimake ta kafin ta rasu?

Local Health Literacy & Media of Health Communication

How do new or young mothers learn about pregnancy or child birth in this community? How did you learn about pregnancy and childbirth? What are the commonest channels for learning about pregnancy and childbirth? Who are the persons entrusted with teaching or guiding new or young mothers about pregnancy and childbirth in this community? Have any of these changed in this community and why? Who are responsible for supporting a mother during pregnancy, childbirth and after delivery in this community and why?

Ta yaya ne mata masu cikin fari suke koyon abubuwan da suka shafi haihuwa lafiya ko jego a wannan shiyar? Ya kika koyi abubuwan da suka shafi haihuwa lafiya ko jego? Wani kafofi ne aka fi amfani dasu wajen koyar da mata masu cikin fari abubuwan da suka shafi haihuwa lafiya ko jego a wannan shiyar? Wani mutane ne aka danka ma alhakin koyar da mata masu cikin fari abubuwan da suka shafi haihuwa lafiya ko jego a wannan shiyar? An samu wani chanji a mutanen da aka danka wa wannan alhakin? Su waye ne suke da alhakin tallafa wa mata lokacin da suke da ciki, ko suka zo haihuwa ko jego a wannan shiyar?

What were your experiences during your last pregnancy and delivery? What did you do to ensure that you had a healthy pregnancy and childbirth? Who supported you in

ensuring you had a normal pregnancy and delivery? How did they support you? What are examples of the things that you know or have heard that can go wrong during labour? Are there examples of anything that will generally make a mother suspect that she is not undergoing labour normally? Who makes the decision of where to go or what to do if anything goes wrong during labour in this community? Who do the community members usually first turn to if anything goes wrong during labour or pregnancy and why? When will you take a pregnant woman to see a traditional birth attendant or health worker?

Menene kuka fuskanta a lokacin da kuke da ciki ko da ka suka zo haifuwa? Wani mata kai ne ku ka dauka a lokacin da ku ke da ciki saboda ku tabbatar da kun zauna a cikin koshin lafiya? Wanene ya tallafa maku a lokacin da kuke da ciki saboda ku sami koshin lafiya? Ta wani hanyoyi ne aka tallafa muku? Wane matsaloli ne za su iya samun mace a lokacin da take nakuda? Menene mace za ta gani a lokacin da take nakuda da zai zaburar da ita ta san cewa akwai matsala atare da wannan haifuwar? Wanene yake da ikon yanke shawarar inda za a kai mace da ta samu matsala a lokacin haifuwa? Wanene ake fara kira in an fahimci cewar akwai matsalar haifuwa tare da mace mai ciki ko nakuda? A wani mataki za'a a kai mace mai matsalar haifuwa wajen unguwar zoma ko mai aikin lafiya?

How can pregnancy and childbirth be made safer for mothers in this community? What should be done and by whom to make pregnancy and childbirth safer for mothers in this community?

Wani hanyoyi ne za'a iya inganta lafiyar mata masu ciki ko kuma wanda suka zo nakuda a wannan shiyar? Su waye ne suke da alhakin daukar matakan taimaka wa mata masu juna biyu a wannan shiyar? Kuma su waye suke da damar yin haka?

Are there any women's group that are working to improve the health of mothers in this community? Who are its members? What kind of activities do they do? Has their activities contributed in making pregnancy & child birth safer in this community?

Akwai kungiyoyin mata na musamman da suke taimaka masu juna biyu a wannan shiyar? In akwai, su waye ya'yan kungiyar? Wani irin ayyuka suke yi? Aikin su yana tasiri wajen taimaka wa mata masu juna biyu a wannan shiyar?

Attendance Sheet for Respondents (Wanda suka halarci wannan tattaunawa)

S/N	Names	Age	Marital Status	Parity	Educational status	Ethnic group	Religion	Occupation
Lamba	Sunaye	Shekaru	Matan Aure ko Bazawara ko Budurwa	Adadin Yaran Ki	Matakin Karatu	Kabila	Addini	Sana'a
1								
2								
3								
4								

5								
6								
7								

Thank you for attending and participating

Mungode Da Zuwa Da Kuma Hadin Kai Da Aka Bamu

D) KEY INFORMANT INTERVIEW GUIDE

KEY INFORMANT INTERVIEW GUIDE WITH MATERNAL HEALTH GATEKEEPERS IN THE COMMUNITY

Introduction: My name is (*Name of the interviewer Dr Sanusi Abubakar*). I am a PhD Research Student at ScHARR, University of Sheffield, United Kingdom. I am administering this interview guide as part of a health literacy research I am conducting in order to improve maternal health in this community.

Confidentiality and consent: I am going to ask you questions about maternal and neonatal health in this community, some of which may be very personal. Your answers are completely confidential. Your name will never be used in connection with any of the information you tell me. You may need to know that this exercise is taking place with other individuals in this community as well. I would greatly appreciate your help in responding to this interview

Interviewer_____

Date/Time_____

Name (Respondent) _____

Designation_____

Location_____

Occupation & Address_____

Local Health Situation

What are the commonest health issues that affect people in your community? Please tell me the five commonest health issues in your community? Why do you think these health issues occur commonly in your community? Who are most affected by these mentioned common health issues and why? How do you or community members cope or handle these mentioned health issues if they happen to be faced by such health issues? The last time you or another community member was faced with such a health issue, what did they do?

What health issues are important in your community? Can you give us examples of these important health issues and why they are important in your opinion? Who are most affected by the mentioned health issues and why? How does someone like you cope or handle these mentioned health issues? How do other community members cope with these health issues? The last time you or another community member was faced with such a health issue, what did they do?

Local Maternal Health Situation

What are the commonest health issues that affect pregnant mothers in your community? Why do you think these health issues occur commonly among mothers in your community? Who amongst these pregnant mothers are most affected by these health issues and why? How do you or community members handle these mentioned health issues afflicting pregnant mothers if they happen to be faced by such a situation? The last time you or another community member was faced with such a health issue in a pregnant mother, what did you do?

What are the factors that are important to the health of mothers in your community? Can you give us examples of these important health issues that affect the health of

mothers and why they are important in your opinion? Which mothers are most affected by the mentioned health issues and why? How will someone like you cope or handle these mentioned health issues that affect mothers if you happened to be faced by it? How do other community members cope with these health issues that affect the health of women? The last time you or another community member was faced with such a health issue that was affecting the health of a mother in the village, what did you do?

What tasks or activities should a mother be expected to refrain from doing in this community during pregnancy and why? What foods, tasks or activities would a mother be encouraged to do during pregnancy in this community and why? (Probe for different periods of pregnancy e.g. pregnancy, birth & after delivery). What will you regard as a good birth and why? Where should a mother go to get a good birth and why? What will you regard as a difficult birth and why? How will you ensure a good birth and avoid a difficult birth for a pregnant mother in your community? What should a mother do after giving birth to ensure the baby and mothers do well?

Local Health Literacy and Local Media of Communication

How do new or young mothers learn about pregnancy or child birth in this community? How did you learn about pregnancy and childbirth? What are the commonest channels for learning about pregnancy and childbirth? Who are the persons entrusted with teaching new or young mothers about pregnancy and childbirth in this community? Have any of these changed in this community and why? Who are responsible for supporting a mother during pregnancy, childbirth and after delivery in this community and why?

Thank You for Participating

Table 1: Template of Women's Groups Register of Maternal and Newborn Health Events

Haihuwa Lafiya, Tudun Kaba Women Group Mother & Newborn Child Health Register														
YEAR -														
2016 - 2017														
S/N	EVENTS OF INTEREST	MONTHS												
		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JU			TOTAL
1	HEALTH OF MOTHER DURING PREGNANCY, LABOUR & AFTER CHILDBIRTH													
	Any death of a woman in preceding month (during pregnancy, childbirth & after delivery) Any illness (during pregnancy, childbirth & after delivery) involving a woman in preceding month that required going to health facility/hospital Any illness (during pregnancy, childbirth & after delivery) involving a woman in preceding month that required intervention/hospitalization													

	<p>Any reported Home births in the community</p> <p>Any reported Health facility births in the community</p> <p>Births at other places in the community</p>													
2	NEWBORN HEALTH EVENTS													
	<p>Any reported Still-births in the community in preceding month</p> <p>Reports of newborns with birth defects in the community</p> <p>Any reported Premature births in the community in preceding month</p> <p>Any death of a newborn in preceding month (during 40 days after delivery)</p> <p>Any illness (during 40days after delivery)involving a newborn child in preceding month that required going to health facility/hospital</p> <p>Any illness (during</p>													

	40days after delivery)involving a newborn in preceding month that required intervention/hospitalization													
3	OTHER COMMUNITY HEALTH RELATED EVENTS													
	Number of Women group meetings held in the community Number of outreach training sessions conducted by women group members held in the community Establishment of a new women group in same/another community													

Main Issues Discussed

Action Points Agreed

Next Steps/Meeting

Name _____

Signature _____

Table 3: Template of Story Reporting Format

<p>Introduction: My name is (<i>Name of the female facilitator</i>). I am working on behalf of a PhD Research Student conducting a doctoral research under the auspices of ScHARR, University of Sheffield, United Kingdom. I am collecting your story using this story reporting format as part of a health literacy research we are conducting in order to improve maternal health in this community.</p> <p>Confidentiality and consent: I am going to ask for your story (if there is any) about changes in the health of mothers and newborn children in this community, some of which may be very personal. Your story is completely confidential. Your names will never be used in connection with any of the information you tell me. You may need to know that this exercise is taking place with other women groups in Kumbotso local government area (LGA) as well. I would greatly appreciate your help in participating in this exercise</p>
<p>Biodata</p> <p>Name _____ of _____ Story Teller.....Thumbpri nt/Sign.....</p> <p>Name _____ of _____ Women's _____ Group </p>

Name of Community.....

Date.....

Time Period.....

Age..... Religion Marital Status

Educational Status

Ethnicity.....

Occupation..... Number of Children.....

Story Guide

Story about effect of any changes in knowledge of danger signs amongst mothers in the community (Probe using What, Where, When, Why)

Story about effect of any changes in knowledge of danger signs among women's group members (Probe using What, Where, When, Why)

Story about effect of any changes in knowledge of danger signs in newborns by mothers in the community (Probe using What, Where, When, Why)

Story about effect of any changes in knowledge of danger signs in newborns among women's group members (Probe using What, Where, When, Why)


Story about effect of any changes in knowledge of healthy diets during pregnancy and after birth by women's group members (Probe using What, Where, When, Why)

Story about effect of any changes in knowledge of healthy diets during pregnancy and after birth by mothers in the community (Probe using What, Where, When, Why)

Story about effect of any changes in participation in women's group activities (such as

Appendix VII : Ethical Clearance Letter

Copy of Ethics Approval Letter from the Health Research Ethics Committee, Aminu Kano Teaching Hospital, Kano. Nigeria



AMINU KANO TEACHING HOSPITAL

P. M. B. 3452, ZARIA ROAD, KANO.
(☎: 07068297399,) www.akth.org.ng, E-mail: enquiries@akth.org.ng, email: (akthkano@yahoo.com)

<u>CHAIRMAN BOARD OF MANAGEMENT</u> DR. SAIDU SAMAILA SAMBAWA <small>B.Sc. MBA, ACA, FCA, ACTI, AMINIM, FCTL, FIMC, MNIM.</small>	<u>CHIEF MEDICAL DIRECTOR</u> PROF. AMINU ZAKARI MOHAMMED, <small>MBBS, FMCPath</small>	<u>CHAIRMAN, M. A. C.</u> DR. HADIZA S. GALADANCI, <small>MBBS, FWACS, FICS, MRCOG.</small>	<u>DIRECTOR OF ADMINISTRATION</u> ALH. MUHD. SULAIMAN, <small>B. Ed. CHPM, AIIAN</small>
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NHREC/21/08/2008/AKTH/EC/1398

AKTH/MAC/SUB/12A/P-3/VI/1498 **7th May, 2015**

Dr. Sanusi Abubakar
Department of Community Medicine
AKTH, Kano.

Ufs:


The Head of Department
Community Medicine
AKTH, Kano.

ETHICS APPROVAL

Further to your application in respect of your research proposal titled "Can Health Literacy Interventions Improve Maternal Health in Rural North Nigeria?", the Committee reviewed your proposal and noted same as a Prospective Study.

In view of the above, Ethics approval is hereby granted to conduct the research.

However, the approval is subject to annual reporting of the progress of the study and its completion to the Research Ethics Committee.

Regards


Abubakar S. Mahmud
Secretary, Research Ethics Committee
For: Chairman

Appendix VIII : Informed Consent Form and Information Sheet

Template 1a: Informed Consent Form (Translated Version)

Sunnan Binciken Lafiya: Za A Iya Amfani Da Hanyoyin Ilimin Wayar Da Kawunan Mutane Na Hadin Gwiwa Wajen Inganta Lafiyar Mata Masu Juna Biyu A Arewacin Nigariya Da Suke Karkara?

Sunnan Mai Bincike: Dr Sanusi Abubakar, ScHARR, Jami'ar Sheffield & Jami'ar Bayero Kano/Asibitin Mallam Aminu Kano, Kano.

Telephone: +2348035738637

E:Mail: abubakarsanusi@yahoo.com

Lambar Wanda Za Ayi Wannan Bincike Tare Dasu

Ayi Alama A Akwati

I confirm that I have read (or it has been read to me) and I understand the

information sheet dated [26/10/14] explaining the above research project and

I have had the opportunity to ask questions about the project.

Na shaida cewa na karanta (ko kuma an karanta mun) wannan takarda

kuma na gane abinda aka rubuta a wannan takardar mai kwannan

wata {26/10/14} game da binciken lafiya da za ayi

I understand that my participation is voluntary and that I am free to withdraw

at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline by *calling the following number*

(+2348035738637- Dr Sanusi Abubakar – Researcher).

Na fahimci cewa sai in naga dama zan shiga wannan binciken kuma ina da yancin in janye ako wani lokaci da nake so batare da an ce mun mai yasa ba.

Ina kuma da dammar in ki amsa tambayoyi da bana ra'ayi amsawa.

I understand that my responses will be kept strictly confidential.

I give permission for supervisors & members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research, unless if I choose to.

Na fihimci cewa duk abinda na fadi sirri ne kuma amana ce da baza a nuna wa kowaba ba tare da izini na ba. Na ba jagororin binciken nan izinin su duba kuma suyi nazarin amsoshin da na bayar batare da am bayana sunana ba, sai dai in na bada izinin ayi haka.

4. I agree for the data collected from me to be used in future research

Na amince da ayi amfani da labarin ko amsoshin da na bayar lokacin

wannan binciken a lokacin da ake bukatar sa saboda wani sabon bincike.

I agree to take part in the above research project.

Na amince kuma na yarda in bada hadin kai ayi wannan binciken

lafiya tare da ni

Sunnan Wanda zaiyi Bincike Kwannan Wata Sa Hannu/Allama Na Tawada

(ko wakilin sa)

Sunnan Mai Daukar Shaida Kwannan Wata Sa Hannu

(Jagora Binciken Lafiya)

**Template 1b: Information Sheet for Health Literacy Research Project in Kumbotso,
Kano State, Northern Nigeria**

**Takarda Da Ke Bada Bayanin Abubbuwan Da Za A Tattauna Tare Da Kungiyoyin
Mata A Kumbotso, Jihar Kano A Arewacin Nigeriya**

Research Project Title: Can Health Literacy Interventions Improve Maternal Health in Rural Northern Nigeria?

Sunnan Binciken : Za A Iya Amfani Da Hanyoyin Ilimin Wayar Da Kawunan Mutane Na Hadin Gwiwa Wajen Inganta Lafiyar Mata Masu Juna Biyu A Arewacin Nigeriya Dake Karkara?

Invitation Paragraph

My name is *Dr Sanusi Abubakar*, a PhD student at the University of Sheffield. I am here to provide you with information about the research we are planning and to invite you to participate in order to improve the health of mothers in our communities. After reading the provided information, you may wish to make a decision whether to participate or not in this research. Thank you for taking your time to read this.

Gayyata

Sunana **Sanusi Abubakar**, ni likita ne (a asibitin Mallam Aminu Kano) kuma dalibi dake karatun digiri na koli (wanda ake ce da shi PhD) a karkashin jami'ar Sheffield dake kasar Turai. Zan gabatar maku da bayanin binciken da nake so in yi a wannan shiyar tare da gayatar ku da ku bamu hadin kai saboda mu cinma burin inganta lafiyar mata masu juna biyu a wannan shiyar. Bayan kun gama karanta ko kuma sauraren bayanin da za ayi, kuna da yancin ku bada hadin kai ko kuma sabanin haka. Mungode daku saurare mu.

Research Setting

The health of mothers during pregnancy, delivery and after giving birth in Northern Nigeria in general and in the rural communities of Northern Nigeria in particular is very poor as shown by the available statistics. For example, mothers that die as a result of pregnancy or pregnancy related condition in Northern Nigeria is as high as 545/100,000 each year, and for each maternal death, there are several episodes of mild to severe illnesses related to pregnancy, childbirth and after birth. Anytime a mother dies or falls sick, it affects her living and unborn children, and her family because mothers cares and support the family. The reasons for this poor state of health of mothers include lack of access or availability of ANC/delivery services, poverty, poor literacy status, socio-cultural factors, low status of females amongst others.

Naziri ya nuna cewa matsalolin da suka addabi mata masu juna biyu a lokacin da suke da ciki, ko kuma suka zo haifuwa ko kuma bayan sun haihu suna da yawa a arewacin Nigerija da kuma karkarar ta. Kiyasi ya nuna cewa kusan mata masu juna biyu dari biyar da arbain da biyar acikin kowane dubu dari ne suke rasa rayukan su a sanadiyan matsalolin da suka shafi ciki ko haihuwa. Amma addadin mata masu juna biyu da suke fama da rashin lafiya or laulayi mai tsanani ya ninka wancan kiyasin da akayi sau dayawa. Illar mutuwar ko rashin lafiyar uwa a kan lafiyar iyalinta (ya'ya ko mijinta) suna da yawa matuka, saboda iyalinta baza su samu kyakyawar kulawa ba in bata da lafiya. Dalilan da suke sanadiyan mutuwa ko rashin lafiya a iyaye mata sun hadu dasu jahilci, rashin zuwa awo, talauci, zalunci da sauran su.

Mothers in communities can be empowered through attaining some level of literacy which in turn tends to improve their health behaviour & practices even if they live in poor communities. Health literacy is related to literacy, and it aims at promoting self and community empowerment amongst mothers so as to improve their health.

Akwai hanyoyi da mata kai da za'a iya amfani dasu a daukaka darajar mata ta basu ilimi da matakan da za su bi in suna da juna biyu saboda su samu koshin lafiya. Daya daga cikin wannan hanyoyin ya kunshi hada kai da tattaunawa da mata da kuma kungiyoyin dake karkara saboda aji matsalolin su kuma awayar musu da kawunan ta hanyoyin hadin gwiwa saboda a inganta lafiyar mata masu juna biyu a karkara. Ana fatan za'a yi wannan aikin bincike ne a shiyoyin Kumbotso, Tudun Kaba, Gaida da Rigafada a Karamar Hukumar Kumbotso dake Jihar Kano, Nigeriya.

Maternal health literacy will be promoted in this research through using participatory research approaches that involves the community in all stages of the research and takes into consideration the experiences and local knowledge inherent within that community. This research project plans to work together with women groups in the LGA to develop, plan, implement & evaluate a health literacy intervention that is useful for improving maternal health. This study will be conducted in Gaida & Rigafada communities of Kumbotso LGA of Kano state and is for an estimated duration of 2 years

Reasons for Selection (Dalilan Da Yasa Aka Zabe Ku)

You have been selected to participate in an in-depth interview in your capacity as a leader or advocate for the health of mothers in this community. We believe you have a lot information and support to give to this research regarding the health of mothers living in your community. E.g. of maternal health gate keepers or stakeholders include local traditional birth attendants, local health facility managers, local religious, political and traditional leaders, male maternal health champions

An gayyace ka ne zuwa wannan bincike a matsayin ka na shugaba ko kuma mai fada aji agame da abubbuwan da suka shafi lafiyar mata a wannan shiyar. Muna fatan za ka bada hadin kai wajen amsa mana tambayoyi game da abubbuwanda suka shafi lafiyar mata masu ciki a wannan shiyar. Misallin wandanda muke so mu gana su sun hada da unguwar zoma, shuwagabanin addini, gargajiya, siyasa da lafiyar a wannan karkara.

Participation (Amincewar Bada Hadin Kai Da Yarda)

Your participation in this research on maternal health in this community is very important and totally voluntary. In the event that you agree to participate, be assured that you can decide to withdraw at any moment from the participatory research without any negative

consequences whatsoever. Some benefits of participation include improved maternal health literacy, maternal health and self empowerment and community empowerment.

Samun hadin kan ki yana da mahimmanci wajen gudanar da wannan bincike, amma kina da yancin janyewa a kowani mataki da ki ka so yin haka batare da wani ya hantare ki ba ko kuma ya musguna miki ba. Wannan binciken na sa kai ne, babu tilas acikin shi. Amma kuma akwai abubbuwa da dama cigaba acikin sa kamar taimaka wa al'umma, wayar da kawuna al'umma, taimakawa mata masu juna biyu wajen samun koshin lafiya da sauran su.

Duk wani sauti da za a dauka ta hanyar amfani da redio ko rubutawa a takarda, sai da izinin ku kuma baza a bayyana sunayyen ku. Zamu kuma ajiye abubbuwan sauti da takardun a offishin mu dake asibitin mallam acikin akwati mai makulli har tsawon shekara uku kafin a kona su in ba a bukatar su. Zamu nuna wa mallaman mu takardun dan ayi nazari akansu kuma watakila a wallafa su a mujallu na ilimi.

All audio recordings and notes of in-depth interviews containing names will be kept strictly confidential, with only the research team leader and relevant member having access to them. They will be locked up in a secure cabinet in another location, the departmental office, located on the guarded premises of the Aminu Kano Teaching Hospital, Kano. These audio recordings and notes will be transcribed and thereafter will be destroyed 3 years after completion of the study. The transcripts of the in-depth interviews will contain no names, and will be available to my supervisors or the public in publications or reports. In addition, the data obtained from this study may be used subsequently in another study or for additional research.

Complaints (Korafe Korafe)

Any complaint you have related to the research can be reported to me (Research Team Leader - Dr Sanusi Abubakar - +2348035738637) and if you are not satisfied, you can report same to the Chairman of the Community Advisory Board, Kumbotso LGA, Kano (Dr Auwalu Gajida - +2348028375412) or the Chairman of Kumbotso Development & Welfare Association (Mr Salisu Adamu - +2348091074262).

Duk korafin da wani yake dashi, zai iya gaya mani ko ya kira ni (Jagoran Bincike - Dr Sanusi Abubakar - +2348035738637), in baki gamsu ba, zaki iya kiran Chairman of the Community Advisory Board, Kumbotso LGA, Kano (Dr Auwalu Gajida - +2348028375412) ko kuma Chairman of Kumbotso Development & Welfare Association (Mr Salisu Adamu - +2348091074262).

Research funding

This research will be mainly self-funded and will be reviewed by the Aminu Kano Teaching Hospital Research Ethics Committee which is approved by the University of Sheffield's School of Health and Related Research (SchARR) ethics review procedure.

Kwarraru masu tantance bincike lafiya na Asibitin Mallam da ke Kano sun tantace wannan binciken kafin muka gudanar das hi. Ni Dr Sanusi Abubakar zan dau nauyin wannan binciken amma zan nemi tallafi daga asibitin Mallam da kuma Jami'ar Bayero ta Kano.

Research Contacts (Ga Lambar Waya Na Jagorarin Wannan Binciken Lafiya)

The following individuals can be contacted for further information related to this research

Za ku iya tuntubar wadannan lambobi ta wayi, in ana bukatar karin bayani

Dr Sanusi Abubakar - +2348035738637, abubakarsanusi@yahoo.com

Mr Graham Jones - +447890086342, graham.jones@sheffield.ac.uk

Dr Emma Everson-Hock - +441142225205, e.everson-hock@sheffield.ac.uk

Finally, you will be provided with a copy of this information sheet to take away with you as well as an informed consent form to sign if you decide to participate in this research. Thank you very much for taking time to read this.

Za a baki wannan takarda ki tafi dashi gida da kuma wani takarda na amincewa da za ki sa hannu a matsayin kin yarda za ki bamu hadin kai wajen gabatar da wannan binciken lafiya. Mungode da ki ka samu lokacin karanta wannan takardar tamu.

Appendix IX : List of Members of the Community Advisory Board, Kumbotso

Composition and designations of Community Advisory Board (CAB) members at the time of the research project

Table 1: Designations of the members, Community Advisory Board, Kumbotso

SN		Designation in CAB	Designation in Community	Sex
1		Member	The Medical Superintendent of the Comprehensive Health Centre	Male
2		Chairman	Representative of the District Head of Kumbotso	Male
3		Secretary	Admin Officer, Comprehensive Health Centre	Male
4		Member	Matron of Comprehensive Health Centre	Female
5		Public Relations Officer	Hospital Attendant, Comprehensive Health Centre	Male
6		Member	Local School Teacher	Female
7		Member representing local youths	Local Dental Assistant	Female
8		Member representing local youths	Local Community Health Officer	Male
9		Member	Chairman, Kumbotso Development & Welfare Association (KUDWA – a local Community Based	Male

			Organization)	
10		Member	Secretary, Kumbotso Development & Welfare Association (KUDWA – a local Community Based Organization)	Male
11		Member	Personal Assistant to Kumbotso LGA Chairman	Male
12		Member	Chief Imam, Kumbotso LGA	Male

Appendix X : Training agenda for female facilitators

Training agenda for female facilitators and list of female facilitators

Table 1a: Workshop training schedule

Activity	Topics	Facilitators
Workshop I (Week 1)	Self Introductions/Training Objectives	Dr Sanusi
	Basic facts of pregnancy (antenatal period), delivery (intra-partum period) & after delivery (post-partum period)	Matron Fatima
	Common (local) causes of maternal deaths and their prevention	Matron Fatima
	Common (local) causes of maternal illness and their prevention	Matron Fatima
	Groupwork/Q&A Session	All
Workshop II (Week 2)		
	Basic facts - Health Literacy	Dr Sanusi
	Introduction to Qualitative research methods including facilitation skills, listening skills, recording & transcribing skills	Dr Sanusi /Matron Fatima
	Introduction to Group management & organizational skills	Dr Sanusi
	Groupwork/Q&A Session	All
Workshop III (Week 3)		
	Introduction to participatory research methods	Dr Sanusi
	Adult learning method	Dr Sanusi
	Auto-Diagnosis (prioritization) method	Dr Sanusi
	Most Significant Change (evaluation) method	Dr Sanusi

	Basic Qualitative Data Management/Analysis	Dr Sanusi
	Groupwork/Q&A Session	All

The topics were taught in three separate workshops of two days duration and over three weeks(with ongoing supervision, meetings and mentorship).

Table 1b: List of research team/female facilitators

SN	Name	Designation	Sex
1	Dr Sanusi Abubakar	Team Leader	Male
2	Fatima Mohammed	Member	Female
3	Hauwa Mohammed Ari	Member	Female
4	Halima Idris	Member	Female

Appendix XI : Samples of drawings used by peer facilitators during community sessions

Picture 1a: Peer-led participatory learning session (using PVM on maternal danger signs) in Kayi community



(Photo was taken by research team members during the health literacy project)

Picture 1b: Peer-led participatory learning session (using PVM on neonatal danger signs) at Tudun Kaba community



(Photo was taken by research team members during the health literacy project)

Picture 1c: Peer-led participatory learning session (using PVM on neonatal danger signs) at Tudun Kaba community



(Photo was taken by research team members during the health literacy project)

Picture 1c: Peer-led participatory learning session (using PVM on maternal danger sign)



Appendix XII : List of evaluation questions

Table 1: Detailed evaluation questions used during thhe formative evaluation of the research project

Serial/ Number	Implementation Constructs	Process Questions	Evaluation	Data Sources	Tools/ Procedures	Timing of Data Collection	Data Analysis or Synthesis	Reporting
1	Fidelity	<p>1. To what extent was the CBPR process implemented as planned?</p> <p>2. To what extent was the auto-diagnosis sessions implemented as planned?</p> <p>3. To what extent was the participatory women's group process implemented as planned?</p> <p>4. To what extent was the MSC process implemented as planned?</p>		<ul style="list-style-type: none"> - Female facilitators - peer-led women's group members -CAB members - Community members 	<ul style="list-style-type: none"> - Female Field notes - Minutes of CAB/Peer-led participatory women's group/facilitator-led participatory women's group meetings - FGDs and KIIs - Stories of Significant Change - participatory women's group register of maternal and 	<ul style="list-style-type: none"> - At inception and formative (process) evaluation phases of the project 	<ul style="list-style-type: none"> - Themes identified during qualitative analysis 	Formative

		5. To what extent were the assessments of Maternal and Newborn Health problems using Qualitative Assessment Methods implemented as planned at baseline during the formative (process) evaluation stages?		newborn health events			
2	Dose delivered	<p>a) To what extent were all modules within the auto-diagnosis sessions implemented during the Facilitator-led women's group meetings?</p> <p>b) a) To what extent were all peer-led participatory learning sessions implemented during the peer-led participatory women's group meetings?</p>	<ul style="list-style-type: none"> - Female facilitators - peer-led women's group members 	<ul style="list-style-type: none"> - Female Field facilitators notes - Minutes of peer led-women's group/facilitator-led women's group meetings - FGDs and KIIs - Stories of Significant Change 	- At formative (process) evaluation phase of the project	- Themes identified during qualitative analysis	Formative
3	Dose received	1. Did women's group members enjoy the facilitator-led women's group meetings and auto-diagnosis sessions/activities?	<ul style="list-style-type: none"> - peer-led women's group members - peer-led women's 	<ul style="list-style-type: none"> - FGDS/KIIs - Stories of Significant Change - Minutes of 	- At formative (process) evaluation phase of the project	- Themes identified during qualitative analysis	Formative

		<p>2. Were the female facilitators of women's groups satisfied with the auto-diagnosis sessions training/modules?</p> <p>3. Did women's group members enjoy the peer led women's group meetings and Peer-led participatory learning sessions (using participatory visual methods) activities?</p> <p>4. Were the peer facilitators of women's groups satisfied with the women's group meetings and activities conducted during the peer-led participatory learning sessions (using participatory visual methods)?</p> <p>5. Did community members</p>	<p>group (Peer facilitators)</p> <ul style="list-style-type: none"> - Female facilitators - Community members 	meetings			
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		enjoy the activities conducted in peer-led participatory learning sessions (using participatory visual methods) during outreaches?					
4	Reach	<p>1. Were the auto-diagnosis session activities delivered to at least 80% of the facilitator-led women's group members?</p> <p>2. Was the Peer-Led Participatory Learning Sessions delivered in at least eight sites/venues in each of the study community?</p>	<ul style="list-style-type: none"> - facilitator-led women's group members - peer-led women's group (Peer facilitators) - Female facilitators - Community members 	<ul style="list-style-type: none"> - FGDS/KIIs - Stories of Significant Change - Minutes of meetings 	<ul style="list-style-type: none"> - At formative (process) evaluation phase of the project 	<ul style="list-style-type: none"> - Themes identified during qualitative analysis 	Formative
5	Recruitment	<p>1. What procedures were followed to recruit Female facilitators to the Maternal Health Literacy Research Project?</p> <p>2. What procedures were followed to recruit women to women's group meetings</p>	<ul style="list-style-type: none"> - CAB members - Female facilitators - Community members 	<ul style="list-style-type: none"> - FGDS/KIIs - Stories of Significant Change - Minutes/attendance list of meetings 	<ul style="list-style-type: none"> - At inception phase of the project 	<ul style="list-style-type: none"> - Narrative description of the process 	Formative

		/auto-diagnosis sessions? 3. What procedures were followed to recruit women's group members to lead peer-led participatory women's group meetings and be resource persons at peer-led participatory learning sessions in the community?					
6	Context	1. What were barriers and facilitators to implementing the CBPR? 2. What were barriers and facilitators to implementing the auto-diagnosis stage of the community action cycle methodology? 3. What were barriers and facilitators to implementing the participatory women's group? 4. What were barriers and	- CAB members - Female facilitators - Community members - participatory women's group members	- FGDS/KIIs - Stories of Significant Change - Minutes/attendance list of meetings - Female facilitators field notes	- At inception and formative (process) evaluation phase of the project	- Themes identified during qualitative analysis	Formative

		facilitators to implementing the MSC?					
		5. What were the barriers and facilitators to implementing assessments of Maternal & Newborn Health problems using Qualitative Research Assessments as planned at baseline and during the formative (process) evaluation stages?					