A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA.

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A Dissertation Submitted to the Faculty of Health Sciences, University of the Witwatersrand, in fulfilment of the requirements for the degree of Master of Science.

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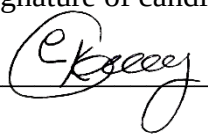
DECLARATION

I, Ezekiel Keoreng, declare that this research report is my own work. No part of it has been copied or written on my behalf by any other person, except where acknowledgment has been made. It is being submitted for the Degree of MSc Nursing at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

(Signature of candidate)



_____day of 09 June 20 22 in Parktown Johannesburg

DEDICATION

In memory of my father

Emmanuel Kekgwathile Keoreng

1929 – 2010

ACKNOWLEDGEMENTS

I want to thank my supervisors, Dr S. J. Armstrong and MRS. N. Makhudu for their invaluable assistance and advice with my dissertation. I also appreciate all the support I received from my friends and family, and above all, I thank God.

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ACRONYM

Table 0-1: List of Acronym

ADDIE	Analyse, Design, Develop, Implement and Evaluate
ANC	Antenatal Care
BBA	Birth Before Arrival
BANC	Basic Antenatal Care
BPCR	Birth Preparedness and Complication Readiness
CBD	Central Business District
CBCT	Community-based continuous training
CDC	Centre for Disease Control and prevention
CHWs	Community Health Workers
EFSS	Emergency Fund Saving Scheme
EFT	Emergency Transport Scheme
JBI	Joanna Briggs Institute for scoping reviews
MHC	Maternal Health Care
MM	Maternal Mortality
MOU	Maternal Obstetric Unit
NGT	Nominal Group Technique
PCC	Population, Concept, Context
PICO	Population, Intervention, Comparator, Outcome
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SADC	Southern African Development Community
SBA	Skilled Birth Attendance
SMS	Short Message Service
TBAs	Traditional birth attendants

USSD	Unstructured Supplementary Service Data
WHO	World Health Organization

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1 INTRODUCTION

1.1 GENERAL INTRODUCTION

The birth preparedness and complication readiness (BPCR) concept is a comprehensive strategy to reduce maternal mortalities (Solnes Miltenburg *et al.*, 2017; Mersha, 2018; Silwal *et al.*, 2020). It is based on the principle that delays in attaining care can be reduced by preparedness for childbirth, as actions needed can be anticipated in case of obstetric complications (Jhpiego, 2004; Markos and Bogale, 2014; Anikwe *et al.*, 2020). Three significant aspects of delays that contribute to MM have been identified as delays in deciding to seek health care, delays reaching the care facility, and delays in receiving adequate care at the facility (Jhpiego, 2004). Delays in the first two aspects can be reduced by employing the BPCR interventions that focus on individuals, families, and communities (Miltenburg *et al.*, 2015). On the other hand, maternal health facilities and referral systems need to improve the quality of care and meet the demand for the care necessary to reduce the delays associated with the health system (Jhpiego, 2004; Stanton, 2004).

Studies have shown that, with an increase in knowledge of BPCR, maternal mortalities could decline. BPCR was introduced as part of the antenatal care (ANC) package by the WHO (Villar *et al.*, 2001) as a simple and practicable way to reduce maternal mortalities. However, given the high proportions of maternal mortalities and the suboptimal knowledge of the BPCR (Mersha, 2018; Moshi *et al.*, 2018; Smeele *et al.*, 2018; Anikwe *et al.*, 2020), it is clear that more innovative interventions need to be employed, to increase the uptake and use of BPCR strategy.

Birth preparedness of both pregnant women and their partners is an essential component of the World Health Organization's Safe Motherhood Programme (WHO, 2015a). However, recent studies in low to middle-income countries have reported poor levels of compliance with the BPCR strategy and a lack of knowledge on the complications of childbirth, which compounds MM as a result of delayed or lack of access to skilled maternity (Markos and Bogale, 2014; Mersha, 2018; Moshi *et al.*, 2018; Smeele *et al.*, 2018; Anikwe *et al.*, 2020). Other factors that have been reported as hindering the BPCR strategy include distance to the health facilities and the geographical location where women live (August *et al.*, 2015; Cheptum, 2018; Kiataphiwasu and Kaewkiattikun, 2018; Silwal *et al.*, 2020).

The development of an effective and feasible programme, built on the knowledge and experiences gained from the BPCR strategy, but designed within the context of the local community, may assist in improving BPCR use and consequently reduce maternal mortalities.

1.2 BACKGROUND -THE BPCR STRATEGY

The importance of BPCR strategies on the outcome of maternal health care, the involvement of male partners in maternal health care (MHC), and the factors that influence and or impede birth preparedness strategies are some of the major themes that appear in the literature regarding the BPCR concept. A brief discussion on these themes will provide context to this study.

1.2.1 The importance of BPCR strategies for MHC

The BPCR strategy is a globally recognised fundamental approach for promoting MHC. It is a process of planning actions in anticipation of birth and its probable complications by women and their families (Soubeiga *et al.,* 2014). It thus promotes the timely use of skilled maternal care, applying the theory that delays in obtaining care are reduced if birth and its complication are well prepared for (Markos and Bogale, 2014; Ijang *et al.*, 2019). As a result, the BPCR strategy reduces delays in seeking health (Berhe *et al.,* 2018). These delays are the most significant contributing factor to MM and can be prevented by seeking timely medical care (Thaddeus and Maine, 1994). The BPCR strategy is essential in mitigating maternal and neonatal mortalities (Soubeiga *et al.*, 2014; Silwal *et al.*, 2020).

The BPCR has also been considered a thorough strategy that promotes the early utilisation of skilled birth attendance (SBA) by care users (Debelew, Afework and Yalew, 2014). SBA is an essential factor in reducing and preventing MM (WHO, 2004; Soubeiga *et al.,* 2014). This is because skilled birth attendants are widely competent and have the mandate to care for women during all stages of maternal health care (WHO, 2004). Similarly, Islam *et al*. (2018) associated BPCR strategy with SBA, pointing out that the use of SBA was amplified by couples who planned together, and therefore intervention to improve BPCR should include men. Besides, BPCR interventions to strengthen SBA should be consistent with local knowledge and involve multi-stakeholders to reduce the mismatch between the offered and the desired care (Solnes Miltenburg *et al.*, 2017).

1.2.2 Barriers to implementation of BPCR strategies

Although there is a wide range of factors affecting women and their partners' level of BPCR, several studies (Andarge, Nigussie and Wondafrash, 2017; Solnes Miltenburg *et al.*, 2017; Pun *et al.*, 2018; Azeze, Mokonnon and Kercho, 2019) identified a few common barriers including the level of education, socioeconomic status, cultural beliefs and norms, health service delivery, antenatal clinic attendance, men involvement and the parity of women. All these factors may

influence the level of BPCR by care users or impede the use of the strategy through a range of circumstances.

For example, men have been proven to play an important role in MHC as partners and parents and can influence maternal health behaviour within their households and communities (Margaret *et al.*, 2006). However, sociocultural norms and beliefs are amongst the most common barriers to men's involvement in MHC. Men believe that sexual and reproductive health, labour and delivery, and child-rearing are the women's domain (Kura, Vince and Crouch-Chivers, 2013; Ghani *et al.*, 2019); they instead associate themselves with culturally defined roles such as being family heads, decision-makers, and financial providers (Kwambai *et al.*, 2013; Dumbaugh *et al.*, 2014; Davis *et al.*, 2016; Falade-Fatila and Adebayo, 2020). Other reasons that impede men's involvement in MHC include health system policies and structures, lack of knowledge of BPCR, and job demands, among others (Vermeulen *et al.*, 2016; Greenspan *et al.*, 2019; Falade-Fatila and Adebayo, 2020).

To overcome these factors that may impede the level of BPCR amongst MHC users, health facilities and organisations need to employ a multi-disciplinary approach. Liaising with educational departments and poverty eradication societies amongst others may be one way of improving the educational status of MHC users and the eradication of poverty. Additionally, healthcare facilities should be improved and well equipped, to accommodate the cultural dynamics of the societies involved.

1.3 PROBLEM STATEMENT

Due to the realisation that birth preparedness of both pregnant women and their partners is an essential component of the World Health Organization's Safe Motherhood Programme, many studies have been conducted in developing countries to assess birth preparedness. Most of these studies have found poor levels of compliance and a great deal of ignorance about possible complications of childbirth, which impacts MM because of women not accessing or delaying access to skilled maternity care. It is known that cultural and geographic aspects influence birth preparedness in many studies that have been conducted in sub-Saharan Africa. However, in South Africa, there is limited literature on the BPCR of MHC users, their partners, and their families.

The data from other sub-Saharan African countries could help devise a programme to improve birth preparedness in South Africa, where problems related to both male and female birth preparedness exist despite the availability of good quality maternity care in many regions of South Africa, including Johannesburg. By consulting women and their partners as MHC users, a more functional

and locally relevant programme for BPCR could be developed, considering their needs and perceptions. Once midwives have access to the evidence of effective methods of improving birth preparedness, it will be possible to use their expertise and understanding of the local population and needs to develop a targeted programme based on the principles of the BPCR for a multi-cultural metropolitan area of South Africa.

1.4 SIGNIFICANCE OF THE STUDY

This study conducted a scoping review to determine the success stories and interventions of BPCR and sought input from MHC users to develop an appropriate programme for an urban area that may assist, in the long term, in reducing high rates of maternal mortalities. No studies have been designed to develop such a programme for a multi-cultural urban area where maternal morbidity and mortality rates remain unacceptably high.

1.5 RESEARCH QUESTION

What would constitute a functional and locally relevant programme to guide and improve BPCR of MHC users and their partners in a multi-cultural urban area of South Africa?

1.6 PURPOSE OF THE STUDY

This study aimed to develop a functional and locally relevant programme to guide and improve BPCR of MHC users and their partners in a multi-cultural urban area of South Africa.

1.7 OBJECTIVES

1. To discover functional strategies for improving BPCR readiness in sub-Saharan Africa.
2. To develop, in a local context, a programme that will guide the improvement of BPCR readiness of MHC users and their partners for a multi-cultural urban area in South Africa.

1.8 DEFINITION OF TERMS (conceptual and operational definitions)

Birth Preparedness Complication Readiness (BPCR) "is a strategy to promote the timely use of skilled maternal and neonatal care, especially during childbirth, based on the theory that preparing for childbirth and being ready for complications reduces delays in obtaining this care" (Jhpiego, 2004).

Maternal mortality "Deaths of women while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes" (NCCEMD, 2012). Maternal death was used alternatively with maternal mortality in this study.

Relevance is defined as 'appropriate to the current time, period, or circumstances; of contemporary interest' (Oxford Dictionary, 2020). In this study, relevance relates to how the programme is accommodative to the local society. A relevant programme should be developed in the context of the target audience, taking into consideration the needs of the audience, such as cultural aspects, socioeconomic status, educational status, as well as the abilities of the health care provider, including human resources, technological developments, financial resources, and equipment.

Functionality refers to **'**the quality of being useful, practical, and right for the purpose for which something was made' (Cambridge University Press, 2020). In this study, the functionality of the programme to be developed means that it has been developed in accordance with the needs of the target audience based on the latest evidence that is known to work and that professional health experts show confidence that the programme will produce the intended outcome.

Expert means a person who is very knowledgeable about or skilful in a particular area' (Oxford Dictionary, 2020). Qualified midwives with at least five years of work experience in Maternal Obstetric Units in Johannesburg District and who reside in Gauteng will be referred to as experts in this study.

Maternal Health Care User in this study referred to women of reproductive age and their male partners, seeking care in all maternal health care settings.

Counselling is defined as the provision of professional assistance and guidance in resolving personal or psychological problems (Oxford Dictionary, 2020). In this study, the meaning of counselling was extended to include teaching or provision of individualised and or group educational information to MHC users for their improvement and uptake of the BPCR strategy.

1.9 CONCLUSION

Chapter one focuses on introducing the BPCR concept, giving a brief background discussion on the factors that influence and impede the involvement in BPCR strategy and the importance of the strategy on MHC. A description of the problem is provided, together with the significance and purpose of the study. The research question and the study's objective were presented, and the clarity of the operational key terms was provided by defining the theoretical and operational meaning in relation to the study.

This study will be presented in 6 chapters, of which the following highlight the research methodology, given in two steps (The Scoping Review and the development of the programme).

The literature review is embedded in the scoping review as it is part of this study. The third chapter details the scoping review, while chapter four presents and discusses the finding from the nominal group interview with MHC users. Chapter five integrates the scoping review findings and the nominal group interview. Finally, chapter six entails the conclusions, summary, limitations, and recommendations.

2 RESEARCH METHODOLOGY

2.1 INTRODUCTION

This chapter details the methodology of this study and gives an overview of the research strategy. It describes how the data analysis was carried out and provides a brief discussion of the ADDIE model, a tool used to develop a programme that will contribute, in the long run, to the reduction of maternal mortalities by improving the awareness of BPCR of MHC users.

2.2 RESEARCH DESIGN

This study used a sequential multi-method, two-phase qualitative approach. The first phase consisted of a scoping review which followed a five-stage framework laid out by Arksey and O' Malley (2005) and later advanced and described by Levac *et al*. (2010) and the Joanna Briggs Institute (2017). The second phase consisted of two stages in which a Nominal Group Technique (NGT) was used to collect data, firstly with MHC users and latterly with health care professionals. The programme was developed using the evidence from the scoping review and the perceptions and needs of care users following the steps outlined in the ADDIE model described in chapter 4. The input from the health care professionals was used to refine the programme. The following table gives an overview of the research strategy.

Table 2-1: Overview of the research strategy

PHASE	OBJECTIVE	SAMPLE	DATA COLLECTION
1	To discover functional and locally relevant methods for improving birth preparedness and complication readiness in sub-Saharan Africa.	CINAHL Complete, Clinical Keys, MEDLINE Complete, PubMed, and ProQuest Nursing & Allied Health Source. Search words/strings will include 'birth preparedness'; 'predictors of birth preparedness'; 'complication readiness; and low to middle income and developing countries	Scoping review following a five-stage framework of Arksey and O' Malley (2005) and later described by the Joanna Briggs Institute (2017).
2a	To develop a programme to improve birth preparedness and complication readiness for a multi-cultural urban area in South Africa.	6 to 8 men and women who have used the maternal health services of the urban MOU.	Nominal group following 4 stage approach: 1. generating ideas, 2. recording ideas 3. Discussing ideas 4. Voting on ideas (consensus-seeking)

2b		Data generated during scoping review and nominal group with health care users.	Development of the local BPCR implementation programme based on data from scoping review and opinions of the local community. The ADDIE model guided the development of the programme, which was done inductively, with the supervision of two nursing education experts (the supervisors of this study).
2c		6 to 8 midwives who have experience working in the urban MOU	Nominal group following 4 stage approach: 1. Generating ideas, 2. Recording ideas 3. Discussing ideas 4. Voting on ideas (consensus-seeking)

2.3 RESEARCH SETTING

This study was conducted in Johannesburg, the capital city of the Gauteng province. Informally known as 'Jozi', 'Joburg' or 'City of Gold', Johannesburg is the largest urban city in South Africa, with a population estimate of 5,926,668 as of 2021. This population covers a land area of 1645 km^2 (The Republic of South Africa, 2021), and its projected growth is 6.5 million by the year 2040. The city demographics are comprised of large and diverse racial ethnicities, including Black Africans accounting for the largest share (76.4%), White (12.3%), Coloreds (5.6%) and the Indian/Asian ethnicity accounting for the smallest size (4.3%). The Nguni language is the most spoken, accounting for about a third, followed by Sotho (25%), English (18%), Afrikaans (7%) and Tshivenda (6%). (World Population Review, 2020).

The city of Johannesburg has a globally competitive health care system (The Republic of South Africa, 2021). Within its densely populated inner-city are public health facilities accessible to these diverse communities of people living in informal housing and township and suburban housing, including foreign nationals. The diversity of communities in Johannesburg makes this city a suitable location to develop an encompassing feasible, and locally relevant programme that can, in the long run, be adapted to other parts of the country as the 'global community' grows due to international migrations.

2.4 PHASE 1 – SCOPING REVIEW

A scoping review provides an effective method to synthesise evidence. (Peters *et al.*, 2017). As there has already been a great deal of research relating to the development and implementation of BPCR, it was considered appropriate to access this evidence to build on it when developing a programme specific to the population for this study. The scoping review followed the five-stage framework of Arksey and O' Malley (2005) and later described the Joanna Briggs Institute (2017). The detailed methods of the scoping review, its findings, and discussion will be presented in chapter 3. The results from the search process were presented using a PRISMA (Preferred Reporting Items for Systematic reviews and Meta-analysis) diagram and some graphical illustrations.

2.5 PHASE 2 – DEVELOPMENT OF THE PROGRAMME

2.5.1 Nominal Group Technique Protocol

An NGT interview was used to source MHC users' input on what content they would consider functional and relevant in a programme to improve their BPCR status. NGT is a structured method to gain a balanced consensus through variation of a small-group discussion (CDC, 2018). This technique generates many ideas and logically selects the most important concepts to answer the research question. The NGT followed a four-step process (see appendix F. adapted from Potter, Gordon and Hamer (2004) study in physiotherapy) described in CDC (2018), which consists of 1, generating ideas, 2, recording ideas, 3, discussing ideas and 4, voting on ideas.

The MHC users' input and the scoping review findings were used to develop the programme, which was then presented to midwives to seek their expert views and verify the programme. This was achieved by conducting a second NGT discussion with MHC professionals, and their input was useful in refining and finalising the programme. The inclusion of health professionals was limited to midwife experts as defined under Population below. However, this was not achieved due to the current Covid-19 pandemic, as most staff members were reportedly on sick leave.

2.5.2 Population

According to Kerlinger and Lee in Grove *et al.* (2015), the term population is defined as 'all elements (individuals, objects, or substances) that meet the certain criteria for inclusion in a study. The population for this study included health care users in the Johannesburg District and midwives working in Maternal Obstetric Units (MOU) in the Johannesburg District.

For the purpose of this study, MHC users are women of reproductive age and their male partners, while a midwife expert is a qualified midwife registered with the South African Nursing Council (SANC) with work experience in maternity units in the district and who resides in Gauteng. Based on Benner's 1984 Novice to Expert Model (Tilden and Tilden, 1985), it is expected that nurses with more years of work experience would have attained expert level and be able to meet the expectation of this study using their intuitive grasp of situations and past concrete experiences.

2.5.3 Sample and Sampling

A sample is defined as a subset of a population selected for a certain study (Grove, Gray and Burns, 2015). The sample for the first nominal group was the health care users who, in addition to having used the services within 12 months, were competent in using the English language. The second nominal group consisted of MHC professionals from academic, regional, and district hospitals as well as MOUs in the district of Johannesburg. Gray *et al.* (2017) define sampling as selecting groups of people, events, behaviours, or other elements with which to conduct a study.

A non-probability convenience sampling was used to select MHC users in the first nominal group, while purposive sampling was used for the second nominal group to select MHC professionals. Convenience sampling is an inexpensive and less time-consuming method where participants are selected as they happen to be at the right place and time (Grove, Gray and Burns, 2015). MHC users were conveniently asked to participate in the study during their visit to the MOU. Those who verbally agreed to participate signed the consent forms after they read the study information sheet (Appendix E) and before participation in the NGT interview. Purposive sampling entails a conscious selection of participants to include in a study (Grove, Gray and Burns, 2015). This ensures that in-depth information was achieved by selecting cases with rich, valuable information for both qualitative and quantitative designs (Grove, Gray and Burns, 2015; Gray, Grove and Sutherland, 2017). Purposive sampling was used to select participants who met the criteria of an "expert". Five midwives were recruited to represent the health care facility in the district. The participants were given the study information sheet (Appendix G) and signed the consent form before taking part in the interview.

2.5.4 Data Collection

The researcher firstly conducted a pilot interview with MHC users which helped to reformulate the interview question explained in the following paragraph. A pilot study with MHC professionals was not conducted as the data collection site, functioned with a skeletal staff due to covid related

effects and finding participants proved to be a challenge. The interview sessions, firstly with MHC users and secondly with MHC professionals followed the NGT outline as stated above. The interview meetings were held in a conducive environment, adhering to the Covid-19 social distancing guidelines and participants were screened for Covid-19 symptoms. Due to Covid-19 restrictions, a maximum of 5 participants was allowed to take part in any nominal group. The size of an NGT can range from 5 to 9 participants (Potter, Gordon and Hamer, 2004). The nominal group interview with MHC users was intended to include male partners of pregnant women, but that was not achieved as male participants were not allowed into the obstetric unit. This was a measure to avoid over-crowding, which could worsen the spread of the Covid-19 virus. All the participants were of reproductive age and were pregnant women at the time of the interview. All necessary equipment, including a flipchart, felt-tip pen, papers and hand sanitisers, were sourced beforehand to facilitate smooth progress during the meetings. The flipchart was placed at the opening end of the 'U' sitting arrangement. Participants were welcomed, introduced, and explained the purpose and procedure of the meeting.

- **NGT-MHC users Interview**

For the first nominal group, members were given a brief discussion on BPCR and the finding of the scoping review before they were asked to answer the question, *'what things can be put in place to enable you and your partner to get prepared for childbirth?'*. This question was changed from *"What would constitute a functional programme in a local context, to improve birth preparedness amongst women of reproductive age and their male partners in South Africa?"* as participants in an interview conducted earlier could not answer the question correctly.

The participants were given an answer sheet with the above question to write their answers. The generated responses were shared with the entire group on a flipchart, after which the recording was initiated to capture the discussion of the ideas each participant shared. After the debate, the similar arguments that the participant shared were grouped into subheadings, which resulted in 7 subheadings (1. Counselling, 2. Partner Involvement, 3. Knowledge of Danger Signs, 4. social media, 5. Staff Attitude, 6. Information to be Provided, and 7. Good Parenting). Participants were then asked to choose any five in order of effectiveness in their view. The researcher then picked the five most rated subheadings to serve as a-priori codes to guide the analysis of the transcribed discussion with the MHC users.

2.5.5 Data Analysis

Both quantitative and qualitative data analysis methods were employed to analyse data from the NGT meeting process (Potter, Gordon and Hamer, 2004). The information collected was verified through inductive content analysis. To provide depth and clarity for this qualitative data analysis, a descriptive presentation of the result using the transcribed individual participants' quotes was used to explain individual and group thinking (Potter, Gordon and Hamer, 2004). The results were graphically illustrated as well. Data were coded to be easily linked and cross-checked against participants' written information.

- **Coding of the transcribed NGT discussion**

The interview's discussion was transcribed verbatim, and each participant's contribution was checked against their own written information and points they gave on the flipchart. The transcript was read several times to familiarise the researcher with the contents. Then the most rated a-priori codes, as derived from the NGT interview (counselling n=21, social media n=10, partner involvement n=15, information to be provided n=8, and staff attitude n=6), were used as main category themes to guide the data coding. These main themes were then analysed in their properties, inducing axial codes. The excerpts from the interview were then linked to the axial codes to help with elaboration, interpretation and the understanding of interventions that can be put in place to enable MHC users to be more prepared for childbirth. Together, these main category themes could help with the development of a functional and relevant programme that will aid BPCR amongst urbanites.

The quantitative analysis was done by allocating and adding scores for each idea (Potter, Gordon and Hamer, 2004; Tuffrey-Wijne *et al.*, 2007). The group's 'best idea' was the one that corresponded to the highest-ranking idea in terms of the allocated score. These ideas were grouped into different subheadings and the subheading perceived as most effective was rated 5 points, while the least effective answer was 1 point. The maximum possible score was 25 as each participant had to choose five answers, of which the highest score was 5. Identical ideas were given the same ranking. However, the one with the higher frequency was ranked higher (For example, if one vote contributed to a score of ten (10) and three votes of 3, 2, and 5 also contributed to 10, the latter voting will rank higher than the former).

2.5.6 Integration and the Development of the Programme using the ADDIE Model

Guided by the ADDIE model (see Figure 2-2), an iterative process was used to develop the programme, integrating the input from the health care users and the findings from the scoping review as stated earlier and illustrated in Figure 2-1. The ADDIE is an instructional method or framework that can be used to develop and design educational and training programmes. The framework includes five steps (Analyse, Design, Develop, Implement and Evaluate) that do not impose a linear progression (Drljača *et al.*, 2017). A brief explanation of this model is given below, and the details of how the programme was developed are discussed in chapter 5. Another nominal group was held with midwives to seek their opinion on whether the developed programme will be functional in a local context.

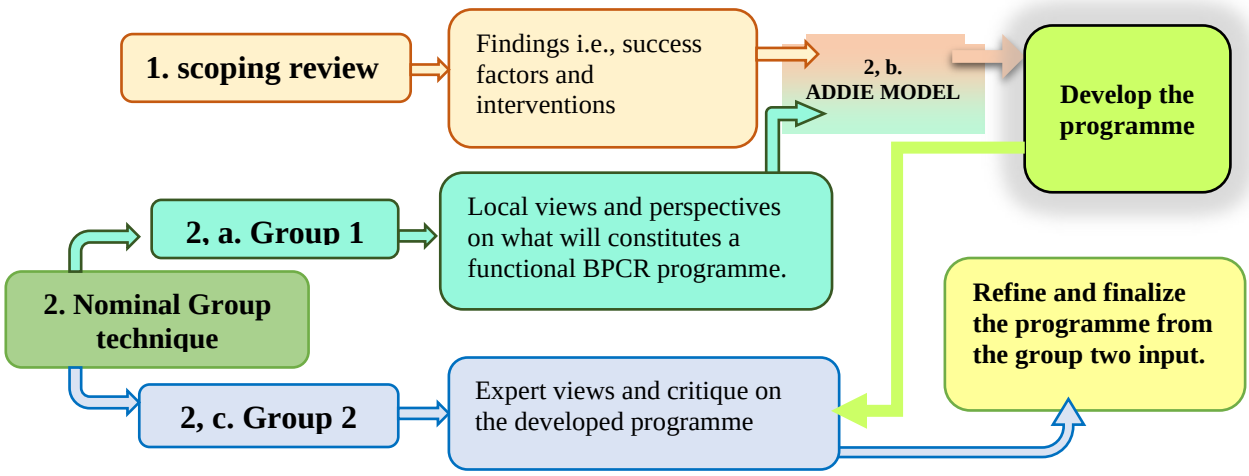

Figure 2-1: The Scoping review and Nominal group integration overview

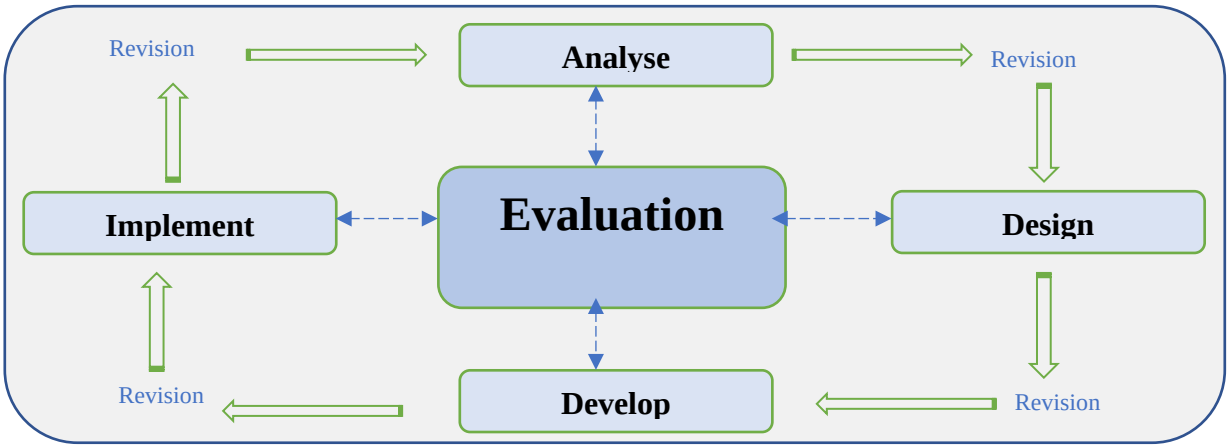

Figure 2-2: The ADDIE model

Analyse

The Analysis phase focuses on the targeted learners, determining their skill level and matching it to each learner's intelligence. Goals are set in this phase, distinguishing what the learners already know from what they should know at the end of their learning. The goal-setting ensures that learners acquire new knowledge and build on what they already have, avoiding redundant information. (Kurt, 2014).

Design

The focus of this phase is to design the project using the information collected from the analysis phase and with principles of instructional design (Drljača *et al.*, 2017). The learning objectives are set, and content for the learning outcome and tools are determined. The details of how the learning will be acquired are explained at this stage (Kurt, 2014).

Develop

The Development stage uses the defined parameters and the collected data in the first two stages to create a programme that will convey the learners' content. The programme will be drafted, produced and tested in this phase. (Kurt, 2014).

Implement and Evaluate

This study omitted these last two phases as they were beyond the scope of the study. The implementation phase involves a continuous modification of the developed programme to refine it

for optimal efficiency and effectiveness, while the evaluation phase involves the final thorough testing of the programme (Kurt, 2014).

2.5.7 NGT- MHC professionals

For the second nominal group, the drafted programme, developed according to the ADDIE model, was presented to MHC professionals who were asked the question, *"Will this programme be functional to improve birth preparedness amongst women of reproductive age and their male partners in Johannesburg?"* Their input was used to refine and finalise the programme.

2.6 TRUSTWORTHINESS

Lincoln and Gubas' (1985) four criteria for assessing the trustworthiness of qualitative research were used to guide this study. Credibility or confidence in the truth was enhanced through prolonged engagement with the study (Vicent, 2015). The researcher conducted the interviews himself and built trust and rapport, which is needed to gather rich data, with the participants by allowing them to share a little knowledge about themselves and, importantly, making them aware of their freedom of choice in participating. Triangulation of methods, i.e., the scoping review's results and the local views and perspectives of the nominal group participants, together with the input from the nursing education experts (study supervisors) who guided the development of the programme, all contributed to enhancing the credibility of this study (Polit and Beck, 2017). The supervisors reviewed the developed data analysis codes to guide credible data analysis (Vicent, 2015). Adhering to confirmability, the researcher kept an audit trail, used reflexivity, and his prior theoretical knowledge was, to the utmost extent, avoided so that the study findings were shaped by the participants and explanations given were only based on the dataset (Polit and Beck, 2017). An in-text citation was used in reference to information from other sources in the scoping review and the study at large, and the reference list provided at the end of the dissertation (Gray, Grove and Sutherland, 2017). Dependability was enhanced through careful, accurate, and complete recording of all research processes.

2.7 ETHICAL CONSIDERATIONS

An application was made to the University of Witwatersrand Human Research Ethics Committee for ethical approval of the study (see Appendix H). Permission to conduct the study was also sought from and granted by the Provincial Department of Health and the District Manager responsible for the urban Maternal Obstetric Unit, where the study was conducted (see Appendix I).

Ethical principles were adhered to. Autonomy was ensured by comprehensively giving participants all information about the study so they could willingly consent to participate in the nominal groups (see Appendix E and Appendix G). Participants were not penalised if they chose to discontinue the study or omitted to answer any questions, they felt uncomfortable with. Autonomy was also ensured by considering the participants' privacy, reasonable assistance in decision making, and seeking permission for everything done to them. Complete anonymity was not possible due to direct contact between the researcher and the participants. However, the participants were informed that their identity would be kept anonymous, and the data collected from them be confidential.

Confidentiality refers to the researcher's handling of private information provided by study participants, such that it will not be shared or linked to the participants or made public without authorisation by the participants (Gray, Grove and Sutherland, 2017). Confidentiality was not assured during nominal group sessions, but participants were asked not to discuss the proceedings outside of the group. However, collected data was kept locked and made accessible to the research team (the researcher and the supervisors). Information on electronic devices (laptops) was protected with passwords only known by the researcher.

Beneficence and non-maleficence are particularly important since the Covid-19 pandemic and social distancing were applied during the nominal groups-interview, and only participants screened for Covid-19 symptoms were allowed in the MOU. Ventilation was ensured, and participants and the researcher kept their facial masks all the time in line with the government's regulations on Covid-19.

2.8 CONCLUSION

The methodology used in this study was discussed in this chapter. A brief discussion of scoping review, which will follow in chapter 3, was conducted to meet the objectives of phase 1 of the study. An overview of the research strategy was given, and the ethical considerations were stated.

3 PHASE 1 – SCOPING REVIEW

3.1 INTRODUCTION

This chapter follows the methodological framework for conducting a scoping review outlined by Arksey and O'Malley (2005). This scoping review aimed to reveal the success factors and barriers of BPCR through various database searches. The generated information from the scoping review was intended to provide bases and guidance for developing a BPCR programme that should be functional and would be utilised locally in an urban area-Johannesburg.

3.2 SCOPING REVIEW METHODOLOGY

A scoping review is a well-suited method to systematically map existing literature to summarise and disseminate research findings (Arksey and O'Malley, 2005), and identify gaps, theories, and critical concepts on the research topic (Peters *et al.*, 2017). This scoping review will follow a five-stage framework laid out by Arksey and O' Malley (2005) and later advanced and described by Levac et al. (2010) and the Joanna Briggs Institute (2017). The result from the search will be presented using a PRISMA (Preferred Reporting Items for Systematic and Meta-analysis) diagram.

3.2.1 The rationale for conducting the scoping review:

As the aim of the study was to develop a locally relevant and functional programme to improve the BPCR of MHC users, a scoping review proved to be more beneficial in exploring broader evidence of success factors and barriers to the implementation of a BPCR strategy. The scoping review considers the appropriateness and feasibility of healthcare practices and delivery utilising broader evidence from well-designed research studies including qualitative and economic studies, to support healthcare decision making (Peters *et al.*, 2017). Compared to other methods of literature synthesis, the scoping review provides a more encompassing view of the evidence which is likely to provide helpful information to guide the development of a programme that will enhance the use of the strategy.

3.2.2 This scoping review aims to:

Explore what would constitute a functional and locally relevant programme to guide and improve BPCR of MHC users and their partners, in a multi-cultural urban area of South Africa?

3.3 IDENTIFYING THE RESEARCH QUESTION

Arksey and O'Malley (2005) and Levac *et al.* (2010) state that the research questions are one of the first things to be identified and must be linked with the purpose of the study when conducting

a scoping review. This review explored the question, *"what were the success factors and or interventions that improved the use of the BPCR strategy, and what were the barriers to this strategy in sub-Saharan Africa and developing countries?"*

3.4 IDENTIFYING RELEVANT STUDIES

The Population-concept-Context (PCC) (see Table 3-1) inclusion criteria described in the Joanna Briggs Institute for scoping reviews (JBI) manual (Peters *et al.*, 2017) was used to guide the identification of relevant articles. The PCC is a less restrictive inclusion criterion than the Population Intervention, Comparator, and Outcome (PICO), recommended for systematic reviews (Archibald *et al.*, 2016).

Table 3-1: Inclusion criteria

	INCLUSION CRITERIA
Population	Women of reproductive age and male partners
Concept	birth preparedness and complication readiness
Context	• All MHC settings (pregnancy, childbirth, and period after childbirth) and facilities; public and private clinics, hospitals, and obstetric units • Articles written in the English language • Articles limited to low to middle income and developing countries throughout the world. • Published articles (qualitative, quantitative, or mixed-method methodology, reviews, and meta-analysis) • Date; January 2000- 2021

3.4.1 Search Strategy

The researcher employed a 3-step search strategy recommended for scoping review in the JBI manual (Peters *et al.*, 2017). The first step, an initial and limited search, was conducted on two electronic databases, CINAHL complete and MEDLINE complete, to familiarise me with the terminology to refine the search words. These databases were chosen for their resourcefulness and cover a wide range of nursing and allied health journals and biomedical literature (Polit and Beck, 2017). This narrow search resulted in a total of 756 articles from both databases, with searches limited to English-language, full text, academic journals, and a time frame from 2000 to 2021. The search string included a combination of keywords including birth preparedness, complication readiness, success factors, interventions, predictors, and determinants to broaden the literature search.

In the second step, the retrieved articles were analysed of the text words contained in their titles and abstracts and the index terms used to describe these articles (Peters *et al.*, 2017). This analysis provided valuable keywords, subject, and index terms to expand the search to other databases, including CINAHL Complete, ClinicalKey, MEDLINE Complete, PubMed, and ProQuest Nursing & Allied Health Source, and are likely to generate articles relevant to the research topic. Table 3-2 below shows the number of retrieved articles from all the databases. Other articles were found through the referencing software Mendeley and the reference list review.

The final step included reviewing the reference list of the identified articles to further search for more related articles. The identified articles were imported into a reference manager software and duplicate removed.

Table 3-2:Number of Citations Listed from Each Database

DATABASES	SEARCHED FOR	NUMBER
CINAHL Complete	(Birth AND preparedness) OR (complication AND readiness) Limiters - Full Text; Date of Publication: 20000101-20211231 Expanders - Apply equivalent subjects, Search modes - Boolean/Phrase	370
MEDLINE Complete	(Birth AND preparedness) OR (complication AND readiness) AND (Predictors OR determinants OR success factors OR barriers) Limiters - Full Text; Date of Publication: 20000101-20211231 Expanders - Apply equivalent subjects, Search modes - Boolean/Phrase	386
ClinicalKey	birth preparedness and complication readiness	87
PubMed	((birth preparedness AND complication readiness) AND (Predictors OR determinants OR success factors OR barriers))	103
ProQuest Nursing & Allied Health Source	((birth preparedness AND complication readiness) AND (Predictors OR determinants OR success factors OR barriers)) AND PEER (yes)	429
Other sources		16
Total citations		1391
Total minus duplicates		518

3.5 STUDY SELECTION

3.5.1 The Selection Process

A two-stage process was followed to select articles systematically. In the first stage, the researcher reviewed the titles and abstracts of the identified articles to determine their eligibility. This process was guided by the inclusion criteria (PCC), and all articles that did not meet this criterion were excluded. Articles were charted as 'included', 'excluded', or 'uncertain'.

The researcher reviewed all articles selected by titles and abstracts guided by the inclusion criteria in the second stage. A second reviewer (the supervisor) was utilised to confirm and validate the

selection process by reviewing at least 10% of the articles, including articles selected as 'uncertain' during the first stage. The researcher and the reviewer reached a common understanding of applying the inclusion criteria for an article. Appropriateness of the included text was also checked during the data charting stage. All the excluded articles and the reasons for exclusion were presented in the PRISMA diagram (see Figure 3-1).

A methodological quality assessment was not undertaken as the interest of the scoping review is not to seek the best available evidence. A scoping review aims to map what evidence has been produced.

3.5.2 Study Selection Results

A vast amount of literature on BPCR was identified during the literature search. However, several duplicates existed in various databases. The duplicates were removed after all the identified articles were imported using Mendeley's reference manager software. A total of 873 articles remained after the deletion of duplicates. These were screened of their titles and abstracts, and 119 articles were identified as potentially relevant. The 119 articles were reviewed by their full text and assessed for eligibility according to the inclusion criteria. However, some studies reported similar results and were excluded due to data saturation. In addition, ten studies charted as uncertain were evaluated by the second reviewer (the supervisor), with 10% of the included studies. The second reviewer conceded with the primary reviewer that the included studies were sufficient. The PRISMA flow diagram below (Figure 3-1) shows the screened results and the reasons for excluded articles. Only 21 studies were selected to answer the research question

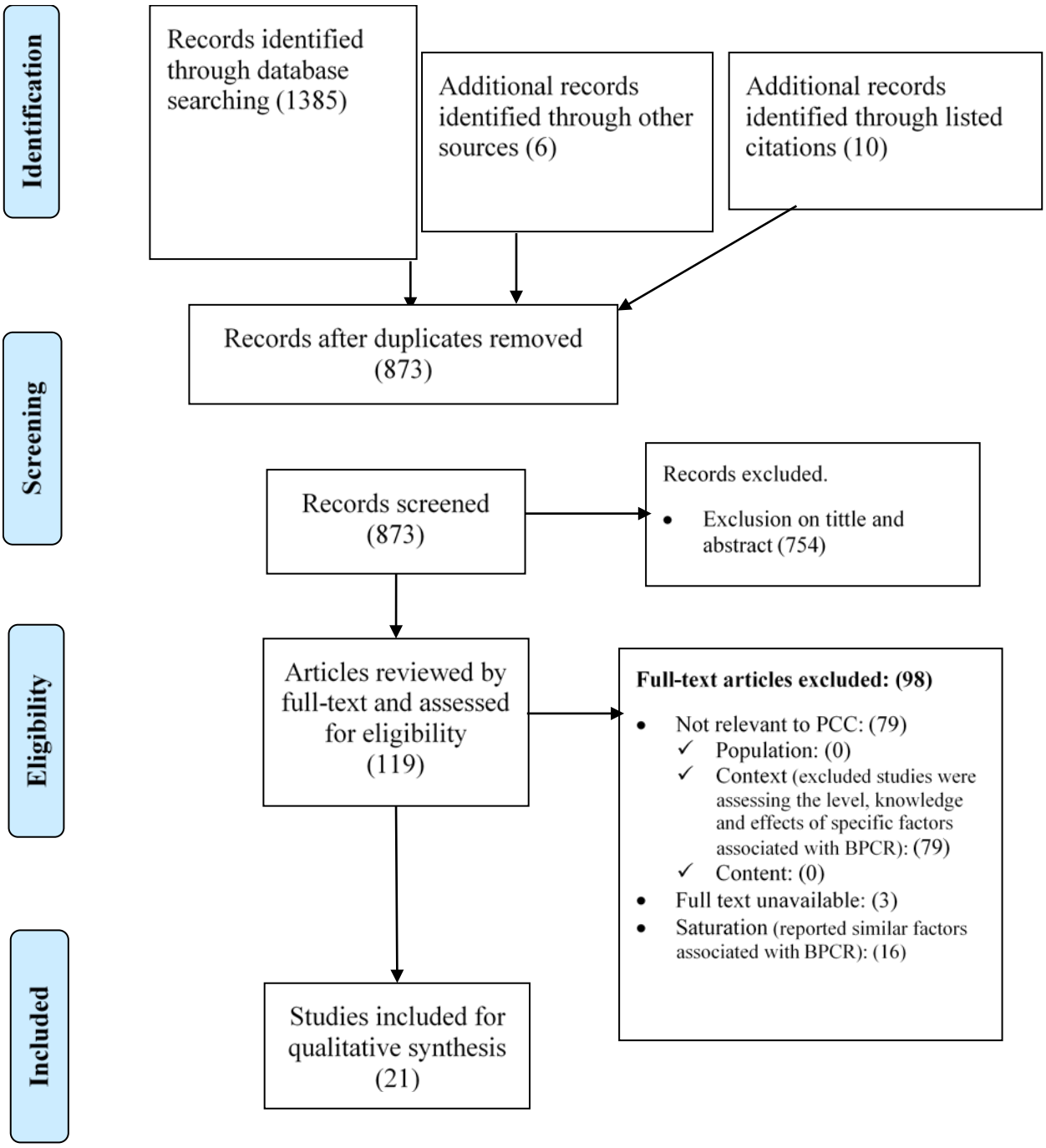

Figure 3-1: PRISMA Flow Diagram for the scoping review process (Peters *et al*., 2017)

3.6 CHARTING THE DATA

The data extraction process in scoping reviews is referred to as charting the results (Peters *et al.*, 2017). This process aims to summarise the results logically and descriptively to correlate to the scoping review's objectives and research question/s (Peters *et al.*, 2017). Key information was

collected from the included article and sorted according to a charting form (Table *3-3*). A second reviewer reviewed each article's identified and charted data to confirm its eligibility. The appropriateness of the extracted data in relation to the inclusion criteria was validated by the second reviewer from at least ten articles (Davison *et al.*, 2020).

Table 3-3: Charting Form Data Matrix of identified articles relating to interventions, influencing factors and barriers of the BPCR strategy.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
1	**Title:** Unlocking community capabilities for addressing social norms/practices: behavioural change intervention study to improve birth preparedness and complication readiness among pregnant women in rural Nigeria. **Author & year of publication:** (Eze *et al.*, 2020) **Journal:** BMC Pregnancy and Childbirth	The study aimed at assessing the potential of improving birth preparedness and complication readiness (BP/CR) using community-driven behavioural change intervention among pregnant women in rural Nigeria	n=158 Pregnant women **Ten villages in Nigeria**	Cross-sectional study FINDINGS: Mean knowledge of danger signs of pregnancy increased by 0.37 from baseline after the intervention. BPCR elements increased by 0.27 while BPCR practices increased by 0.22 for saving money. ANC and Facility delivery significantly increased by 8.2 %and 8.3%, respectively. Participation in community-related BP/CR activities increased by 11.6%	Community behavioural interventions such as the following are effective interventions that can improve the awareness and practice of BPCR strategies. Advocacy visits and stakeholder engagement for community buy-in, support, sustainability, and programme ownership. Training of volunteer community health workers (CHWs) on BP/CR. Training of the household members on BPCR. Facilitation of Emergency Fund Saving Scheme (EFSS) and Emergency Transport Scheme (ETS) and training on BP/CR for the leaders of community associations/groups. production and distribution of posters/almanacs carrying messages on danger signs and BP/CR elements to participants
2	**Title:** Factors Affecting Birth Preparedness among Pregnant Women Attending Public Antenatal	To establish the factors affecting birth preparedness among pregnant women attending public antenatal	n=389 Pregnant women attending antenatal clinic. **Kenya**	Descriptive cross-sectional study FINDINGS Factors that affected birth preparedness were:	Education increases the likelihood of women being prepared for birth as most women who had a higher level of education were more prepared.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
	Clinics in Migori County, Kenya **Author & year of publication**: (Cheptum, 2018) **Journal:** Biomedical Journal of Scientific & Technical Research	clinics in Maori County.		Marital status Maternal occupation Partner's level of education Type of health facility attended by respondents	Low-income occupation is associated with low birth preparedness as women's economic dependence is limited. Economic empowerment leads to increased practice of Birth preparedness. Men play the role of financial provision, and if their level of education is low, they are likely to get jobs with low income, with leads to financial constraints and consequently low practice of birth preparedness
3	**Title:** Effect of focused birth preparedness and complication readiness counselling on pregnancy outcome among females attending tertiary care hospital in Barabanki district, Uttar Pradesh, India **Author & year of publication**: (Shukla *et al.*, 2019) **Journal:** Journal of Education and Health Promotion	This study aims to study BPCR-related awareness and practices among pregnant females and the effect of focused and structured birth preparedness counselling on complication readiness among pregnant females	n=130 Pregnant females Facility-based **India**	facility-based follow-up study FINDINGS The post counselling BPCR index was significantly higher compared to pre-counselling baseline index. Abortion was higher in women whose BPCR index was below average post counselling.	Focused and structured counselling of pregnant women positively impacts pregnant women's knowledge and attitudes. Better pregnancy outcomes in terms of maternal and foetal health could be achieved by optimising the BPCR awareness, focusing on structured counselling-like intervention, e.g. Discussions on BPCR components and their targeted benefits, textual materials and pictures, training of staff nurses and counsellors on BPCR domains.
4	**Title:** Birth Preparedness and Complication Readiness (BPCR) interventions to	The primary aim was to evaluate the impact of BPCR interventions involving women,	N=14 randomised studies. (292 256 live births) Pregnant women	Systematic review and meta-analysis FINDINGS	BPCR interventions effectively reduce maternal and neonatal mortality in low-resource settings if an

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
	reduce maternal and neonatal mortality in developing countries: Systematic review and meta-analysis **Author & year of publication:** (Soubeiga *et al.*, 2014) **Journal:** BMC Pregnancy and Childbirth	families, and communities during the prenatal, postnatal, and neonatal periods to reduce maternal and neonatal mortality in developing countries	**Developing countries**	Meta-analysis showed that exposure to BPCR intervention was associated with a statistically significant reduction of 18% in neonatal mortality risk and a non-significant decrease of 28% in maternal mortality risk. Pooled results revealed that BPCR interventions were also associated with an increased likelihood of use of care in the event of newborn illness, clean cutting of the umbilical cord, and initiation of breastfeeding in the first hour of life	adequate population is covered. BPCR intervention increases the knowledge of women of danger signs, and those in the intervention groups were more likely to carry out BPCR activities than their peers in control groups. Important interventions included: Counselling of women in perinatal clinics. Home visits strategies. Community mobilisation activities
5	**Title:** Effectiveness of the Home-Based Life-Saving Skills training by community health workers on knowledge of danger signs, birth preparedness, complication readiness and facility delivery, among women in Rural Tanzania **Author & year of publication:** (August *et al.*, 2016b) **Journal:** BMC Pregnancy and Childbirth	Our aim was to evaluate if the Home-Based Life Saving Skills education by community health workers would improve knowledge of danger signs, birth preparedness and complication readiness and facility-based deliveries in a rural community in Tanzania	n=1,584 pre-intervention and n=1,486 post-intervention. Pregnant women **Rural Tanzania**	A quasi-experimental study FINDINGS: There was a significant effect on the knowledge of three or more danger signs during childbirth and postpartum for those mentioning three or more of the signs. The utilisation of antenatal care with four visits improved significantly. Use of facility delivery improved in the intervention area, but there was no significant net effect compared to comparison district.	Community health workers can be utilised as teachers of BPCR components to pregnant women and their families. The use of community-based intervention effectively raised awareness of danger signs during pregnancy, childbirth, and postpartum amongst pregnant women and their families. It also increased health facility deliveries which employed a skilled birth attendant. Collaboration of community health workers and health care professionals can be useful in providing pregnancy-related knowledge and raising

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
					awareness and practice of BPCR. The Home-based life-saving skills programme included 12 modules that cover core topics for women and family members, maternal complications, and newborn complications
6	**Title:** Level and factors associated with birth preparedness and complication readiness among semi-pastoral pregnant women in southern Ethiopia, 2016 **Author & year of publication:** (Iyasu *et al.*, 2018) **Journal:** BMC Research Notes	To determine the level of birth preparedness and complication readiness (BPCR) and associated factors among semi-pastoral pregnant women in southern Ethiopia.	n=746 Pregnant women **Ethiopia**	Community-based cross-sectional study. FINDINGS: BPCR was low among women in Southern Ethiopia. The main predictors for BPCR were: Formal education Husband occupation Spouse attending formal education. Women's knowledge of at least two danger signs was significantly associated with BPCR.	Education is essential in improving awareness of BPCR. Occupation alleviates the financial burden, and as a result, pregnant women can save money for transport which is one practice for birth preparedness.
7	**Title:** The significance of interfamilial relationships on birth preparedness and complication readiness in Pakistan **Author & year of publication:** (Ghani *et al.*, 2019) **Journal:** Women and Birth	To identify and measure the influence of husbands and other family relationships on birth preparedness and complications readiness in the Khyber Pakhtunkhwa province of Pakistan	n=700 Pregnant women **Pakistan**	cross-sectional exploratory study FINDINGS: Mother-in-law's role, men's and women's level of education, and interfamilial relations are still the most significant factors influencing BPCR	Mutual understanding between husband and wife and a good relationship between woman and her mother-in-law are essential elements in ensuring BPCR. Individualised care and cultural awareness by maternal care providers are essential to help understand different interfamilial relationships.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
8	**Title:** A family-oriented antenatal education program to improve birth preparedness and maternal-infant birth outcomes: A cross sectional evaluation study **Author & year of publication:** (Shimpuku *et al.*, 2019) **Journal:** Reproductive Health	This study aimed to evaluate the maternal and infant outcomes of a family-oriented antenatal group education program that promotes Birth Preparedness and Complication Readiness in rural Tanzania.	n=194 (intervention group, n=50; control group, n=144) Pregnant women and their families **Rural Tanzania**	cross sectional evaluation stud FINDINGS: Participants in the intervention group were significantly knowledgeable and practiced BPCR compared to those in the control group. Knowledge of a health facility in case of an emergency, arrangement of an accompaniment to go to a health facility for birth, decision of birthplace with or without a partner, and attendance of ANC more than four times were among the practiced things in the intervention group. For birth outcomes, the intervention group had less bleeding or seizure during labour and birth, fewer Caesarean sections and fewer neonatal complications	Antenatal educational programmes on birth preparedness and maternal-infant outcomes can significantly increase the awareness of BPCR strategies and improve labour and childbirth outcomes. The programme details. A picture drama was presented in the local language, and it conveyed the story of two pregnant women and their approach to health care. One was well prepared and did attend ANC, while the other did not know much about maternal services.
9	**Title:** Strategies for helping families prepare for birth: experiences from eastern central Uganda **Author & year of publication:** (Līga Timša *et al.*, 2015) **Journal:** Global Health Action	This study aimed to investigate factors associated with birth preparedness in three districts of eastern central Uganda.	n=2010 Women who had delivered within the past 12 months. **Uganda**	cross-sectional baseline study FINDINGS: Only about 25% of respondents took all three actions relating to preparing for childbirth, but discrete actions (e.g., financial savings and identification of place to deliver) were taken by 75%	Counselling on danger signs during ANC visits is essential in improving BPCR practices. Factors associated with increased knowledge and practice of BPCR are as follows: Four or more antenatal clinic visits during the first or second trimester Counselling on danger signs during pregnancy

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
				of respondents. Variables associated with being prepared for birth were having four antenatal clinic visits and counselling on danger signs during pregnancy or place of referral. Other associated variables included being accompanied by one's husband to the place of delivery, higher socioeconomic status, and having a regular income.	Being accompanied by husband High socioeconomic status Having regular income
10	**Title:** Do male engagement and couples' communication influence maternal health care-seeking? Findings from a household survey in Mozambique **Author & year of publication:** (Sitefane *et al.*, 2020) **Journal:** BMC Pregnancy and Childbirth	This study explored the effects of couples' communication and male participation in birth preparedness and complication readiness (BPCR) on delivery in a health facility ("institutional delivery").	n=1422 women **Mozambique**	A cross-sectional, household survey. FINDINGS: The odds that women would deliver in a health facility were 46% greater amongst women who discussed family planning with their partners than those who did not. When a woman arranged transport or chose a delivery site on her own, there was no significant increase in institutional delivery, but there was a larger, significant association with partner involvement. Neither saving money nor choosing a birth companion showed a significant association with institutional delivery—with or	Men play an important role in improving maternal and neonatal health outcomes if they participate in BPCR. Couple communication is a fundamental approach for promoting high-impact health behaviours.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
				without partner involvement. The odds of delivering in a facility were 28% less amongst poor women whose partners did not participate in BPCR than wealthy women, but when partners helped choose a place of delivery and arrange transport, this gap was nearly eliminated	
11	**Title:** Associations between mass media exposure and birth preparedness among women in southwestern Uganda: A community-based survey **Author & year of publication:** (Asp *et al.*, 2014) **Journal:** Global Health Action	To explore the association between media exposure and birth preparedness in rural Uganda.	n=765 Recently delivered women. **Southwestern Uganda**	community-based survey FINDINGS: Women who read newspapers were more likely to be more prepared for birth. High media exposure, i.e., regular exposure to radio, newspaper, or television, showed no significant association with birth preparedness.	Literacy can improve birth preparedness as women who read newspapers were more likely to be prepared for birth as compared to those who listened to the radio or watched television. High exposure to media has the potential to increase BPCR
12	Title: Effect of a participatory multisectoral maternal and newborn intervention on birth preparedness and knowledge of maternal and newborn danger signs among women in Eastern Uganda: A quasi-experiment study **Author & year of publication:**	This study assessed the effect of a participatory multisectoral maternal and newborn intervention on BP and knowledge of obstetric danger signs among women in Eastern Uganda	Two-stage sampling n=2,237 (1,101 in the comparison group and 1,136 in the intervention group) and n=1,946 (920 in the comparison group and 1,026 in the intervention group)	Quasi-experiment study. FINDINGS: The overall BP practices increased after the intervention. The increase was significant in both intervention and comparison areas, with a slightly higher increase, in the intervention area.	More approaches are needed to explore the effects of multisectoral approach to improving birth preparedness and knowledge of obstetric danger signs.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
	(Kananura *et al.*, 2017) **Journal:** Global Health Action		Women who delivered in the last 12 months. **Eastern Uganda**		
13	**Title:** Journey to facility birth in Zanzibar: a questionnaire-based cohort study of patients' perspectives on preparedness, access, and quality of care **Author & year of publication:** (Herklots *et al.*, 2021) **Journal:** BMJ Open	This study aims to provide insights in the perspectives of women with severe maternal morbidity on preparedness, access, and quality of care in Zanzibar's referral hospital.	N=325 Women who experienced maternal near-miss complications. **Zanzibar**	Questionnaire-based cohort study FINDINGS: Patients with near misses had less formal education, perceived their wealth as poor, and often had stillbirths. More than controls, near-miss patients experienced barriers in reaching care, often of financial nature. Quality of care was perceived as high	Being educated can reduce near-miss complications as it was shown that less-educated women experienced the most near-misses. Sociodemographic differences impact health outcomes, and patients should be involved in maternity care decision-making. Health care facility also needs to ensure the availability of medical supplies.
14	**Title:** Effect of health education on birth preparedness and complication readiness on the use of maternal health services: A propensity score-matched analysis **Author & year of publication:** (Izudi *et al.*, 2019) **Journal:** Midwifery	An evaluated whether health education on birth preparedness and complication readiness (BPCR) has an impact on the utilisation of SBA and early postnatal care in Mundri East County, South Sudan.	n=385 Postpartum mothers Primary health care facility **South Sudan**	Quasi-experimental FINDINGS: Health Education on BPCR is significant in increasing SBA but not early postnatal care. In propensity score-matched analysis, SBA significant increase and insignificant increase in early postnatal care	Health education on BPCR improved SBA; however, it was ineffective in improving early postnatal care. Education on BPCR was based on the 2006 WHO guidelines
15	**Title:** Impact of birth preparedness and complication readiness interventions on birth with a skilled attendant: A systematic review **Author & year of publication:**	To assess the effect of birth preparedness and complication readiness interventions on increasing birth with a skilled attendant.	n=33 studies Pregnant women, women who recently gave birth, husbands of pregnant women or of women who recently gave birth, health care	A systematic review FINDINGS: Thirteen studies resulted in an increase in birth with a skilled attendant or facility birth.	BPCR interventions can increase knowledge of BPCR. However, the interventions do not always result in skilled birth attendants.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
	(Miltenburg *et al.*, 2015) **Journal:** PLoS ONE		providers, traditional birth attendants (TBAs), all adults in the community **(in low- and middle-income countries)**	Majority of authors reported an increase in knowledge of BPCR	
16	**Title:** Impact of Community-Based Continuous Training on Promoting Birth Preparedness and Pregnancy Outcome in Rural Odisha, India: An Interventional Study **Author & year of publication**: (Swain *et al.*, 2019) **Journal:** The Journal of Obstetrics and Gynaecology of India	The study aimed to evaluate community-based birth preparedness and complication readiness training on pregnancy outcome. To find the effect of level of birth preparedness, complication readiness on maternal and foetal outcome.	n=1080 Women of reproductive age between 18-49 at a gestational age of 24 and below. **Rural Odisha, India**	Quasi-experimental time series FINDINGS: Community-based continuous training (CBCT) interventional programmes effectively promoted positive behaviours on BPCR. Pregnant mothers who completed their antenatal visits and were well prepared for delivery were found to be having two times more favourable pregnancy outcomes than those who had not	CBCT interventional programmes are effective in promoting positive behaviour in BPCR. BPCR intervention strategy can be utilised as a timely and effective community action plan for ensuring a favourable pregnancy outcome. Important components of the programme: Supervised birth preparedness training Regular sensitisation Follow-up session
17	**Title:** The impact of community based continuous training project on improving couples' knowledge on birth preparedness and complication readiness in rural setting Tanzania; A controlled quasi-experimental study **Author & year of publication:**	This study aimed at finding the impact of a Community Based Continuous Training (CBCT) project in improving couples' knowledge on birth preparedness and complication readiness in rural Tanzania.	n=561couples **Rural setting Tanzania**	The quasi-experimental study FINDINGS: At post-test assessment, knowledge mean scores were significantly higher in the intervention group among pregnant women and their male partners than in the control group. There was a significant increase in knowledge when	CBCT project in this study was feasible and effective in knowledge empowerment and behaviour change among expecting couples on improving knowledge about BPCR.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
	(Moshi, Kibusi and Fabian, 2021) **Journal:** PLoS ONE			the mean scores were compared within the intervention group of pregnant women and male partners groups.	
18	**Title:** Determinants of birth preparedness and complication readiness: A cross-sectional study of parturient in a tertiary health institution in South-East Nigeria **Author & year of publication:** (Iloghalu, Ugwu and Obi, 2020) **Journal:** Nigerian journal of clinical practice	The study assessed the predictors of optimal birth preparedness and complication readiness among parturients in a tertiary health institution in Nigeria.	n=420 Parturient **Nigeria**	Descriptive cross-sectional study. FINDINGS: Majority (74.2%) of the booked and about half of the unbooked parturients were knowledgeable about BPCR. Most (92.4%) of the booked parturient were optimally birth prepared at delivery against 22.2% of the unbooked. Significant predictors of optimal BPCR included: Higher parity. Tertiary educational level. Regular antenatal visit. Information received on birth preparedness before delivery. Booked status.	The sociodemographic factors, as well as information given to expectant women during antenatal visits or pregnancy, are important factors that can ensure optimal practice and awareness of BPCR
19	**Title:** Effect of Pregnant Mothers' Forum Participation on Birth Preparedness and Complication Readiness among Pregnant Women in Dale District, Southern Ethiopia: A	This study assessed the association of participation in pregnant mothers' forum with birth preparedness and complication readiness plan among pregnant	n=604 pregnant women **Southern Ethiopia**	Community-based comparative cross-sectional study FINDINGS: A quarter (25.8%) of the women were prepared for anticipated complications, 20.7% were forum members.	In Ethiopia, all pregnant women are expected to be part of an expectant mother's forum, which is a strategy developed to facilitate preparedness for birth at a health facility, and the forum promotes seeking care early during an emergency.

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
	Comparative Cross-Sectional Study **Author & year of publication:** (Bogale, Astatkie and Wakgari, 2019) **Journal:** Journal of Pregnancy	women in Dale District		Factors associated with birth preparedness: Being a pregnant mother's forum member having focused counselling monthly income having antenatal care institutional delivery during last birth were significant. Predictors of complication readiness: Being forum members Having antenatal care attendance before or at four months of gestational	This is an important intervention that improves the awareness of BPCR among pregnant women, as the study clearly shows there are significant improvements among women who were members of the forum.
20	**Title:** Android Application Model of "Suami Siaga Plus" as an Innovation in Birth Preparedness and Complication Readiness (BP/CR) Intervention. **Author & year of publication:** (Santoso *et al.*, 2017) **Journal:** Journal of family & reproductive health	The study sought to examine the effectiveness of the android application program of Suami Siaga Plus in increasing husband's scores in birth preparedness and complication readiness (BP/CR) intervention.	n=38 couples of husbands and pregnant women. **Semarang-Indonesia**	Randomized controlled trial with pretest-posttest design. FINDINGS: Husbands' knowledge of key danger signs and five standard elements in BP/CR practices in both intervention and control groups increased after counselling. Moreover, the proportion of husbands who understand the key danger signs during pregnancy was higher among those exposed to the Suami Siaga Plus application delivered via	A combination of counselling and Suami Siaga Plus application significantly improves husbands' and wives' scores on BP/CR compared to those who received counselling only. The use of technology as an intervention together with conventional educational methods can be beneficial in raising the BPCR practices

No.	Article details	Aim /Purpose	Population and setting	Design and findings	Lessons learned with regards to the implementation of the BPCR programme
				mobile phone. The combination of counselling and the application boosted 20% of husbands' scores from 60.4 to 72.9.	
21	**Title:** Improving pregnant women's knowledge on danger signs and birth preparedness practices using an interactive mobile messaging alert system in Dodoma region, Tanzania: a controlled quasi-experimental study **Author & year of publication:** (Masoi and Kibusi, 2019) **Journal:** Reproductive Health	This study aimed to test an interactive mobile messaging alert system's effectiveness in improving knowledge of danger signs, birth preparedness and complication readiness practices among pregnant women in Dodoma region, Tanzania.	n=450 Pregnant women attending antenatal care. **Dodoma municipal Tanzania**	A controlled quasi-experimental study FINDINGS: There was a significant increase in knowledge and birth preparedness in the intervention group. The intervention effect size of 85% was noted.	The Interactive mobile messaging alert system was demonstrated to increase women's knowledge of danger signs and improve their birth preparedness practices.

3.7 COLLATING, SUMMARIZING, AND REPORTING THE RESULTS

This review presented and summarized the results from the search process using a modified PRISMA (Figure 3-1) recommended for scoping reviews (Halas *et al.*, 2015; Nelson *et al.*, 2015). Also, a data extraction table (Table 3-3) was created, showing all the extracted data from the included studies. The extracted data were analysed as follows.

3.7.1 Characteristics of the included studies

- **Article distributions by geographical location**

  This study considered interventions for the BPCR strategy and its associated barriers from developing countries throughout the world, as the programme was developed for South Africa, which is a developing country. Amongst the included studies were 71.4% (n=15) primary studies from Africa, 19% (n=4) primary studies from Asia and 9,5% (n=2) secondary studies from developing countries and low to middle-income countries.

- **Article distributions by year of publications**

  The included published studies covered a period of 8 years, starting from 2014 to 2021. Most studies relating to the BPCR strategy were published in 2019, as shown in Figure 3-2 below.

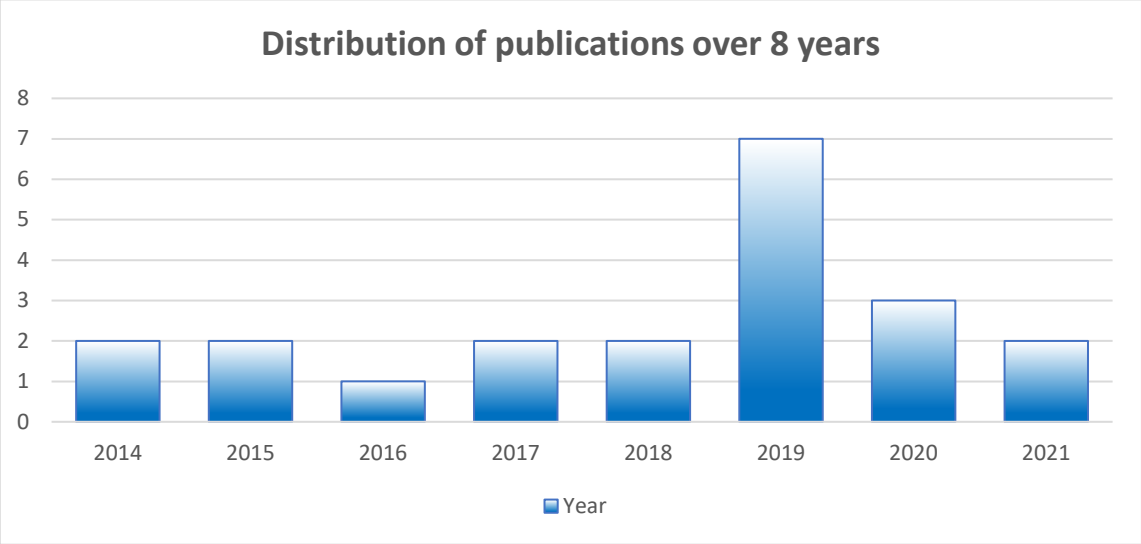

Figure 3-2: Distribution of publication over eight years

- **Articles according to journals and country**

  The following tabulation is a distribution of articles according to journals and countries.

Table 3-4: Article distribution by journal and country

COUNTRY	NO. OF ARTICLES	JOURNAL
Nigeria	1	BMC Pregnancy and Childbirth journal
	1	Nigerian Journal of Clinical Practice
Uganda	3	Global Health Action journal
Ethiopia	1	Journal of Pregnancy and Reproductive Health
	1	BMC Research Notes
India	1	The Journal of Obstetrics and Gynaecology of India
	1	Journal of Education and Health Promotion
Pakistan	1	Women and Birth
Zanzibar	1	BMJ Open
South Sudan	1	Midwifery
Low-middle income countries	1	PLoS ONE
Developing countries	1	BMC Pregnancy and Childbirth journal
Tanzania	2	The reproductive health
	1	PLoS ONE
	1	BMC Pregnancy and Childbirth journal
Mozambique	1	BMC Pregnancy and Childbirth journal

Kenya	1	Biomedical Journal of Scientific and Technical Research
Indonesia	1	Journal of family and reproductive health

- **Article distributions in publication journals**

  Most studies (19%, n=4) were published in the BMC Pregnancy and Childbirth journal, followed by the Global Health Action journal at 14.3% with three studies. The reproductive health and PLoS ONE journals ranked third in publishing at 9.5%, with two published studies each. Each of the following journals published one study of the remaining 47.6% (n=10) studies. This included: BMC Research Notes, Journal of Pregnancy and Reproductive Health, Nigerian Journal of Clinical Practice, The Journal of Obstetrics and Gynaecology of India, Midwifery, BMJ Open, Women and Birth, Journal of Education and Health Promotion, and lastly, the Biomedical Journal of Scientific and Technical Research.

- **Author collaborations in publications articles**

  Only one study (4.8%) was written by a single author, while the remaining 95.2% (n=20) had multiple authors.

- **Approach and focus of reviewed articles**

  The quantitative approach was used in 90.5% (n=19) of the studies, of which 47% (n=9) were cross-sectional studies, 26.3% (n=5) were quasi-experimental, and the remaining 26.3% (n=5) were comprised of: a systematic review, cohort study, randomised controlled trial, community-based survey, and a facility-based follow-up study. One study (4.8%) used a mixed-method approach with a quasi-experimental design. The qualitative approach was observed in 4.8% (n=1) of all the studies and was a systematic review.

  These studies focused on exploring various aspects of BPCR. In most studies, 81% (n=17), several interventions to improve the use of the BPCR strategy and its effects and outcomes were considered. These interventions ranged from community-based interventions, the use of media and technology, ANC counselling and education, the involvement of male partners, and a multisectoral approach. The study that utilized a multifaceted intervention approach (community interventions, ANC education and Media and technology) observed a significant increase in all the variables amongst its intervention group (Shimpuku *et al.*, 2019) compared to the single intervention studies. In some studies, 19% (n=4) focused on the level, factors, and predictors of the BPCR strategy.

3.7.2 Main themes derived from the studies and influential factors and barriers of the BPCR strategy

Five categories of intervention were derived from this scoping review as main themes. The following table identifies these themes and their subthemes.

Table 3-5: Main themes and sub-themes

	Main Themes	Sub-themes
1.	Community-based interventions	Addressing social norms or practices through behavioural change
		Use of community health workers
		Enrolling pregnant women in forums
		Continuous Community Training Programmes
		Conducting home visits
		Supervised birth preparedness training sessions
		Provision of continuous sensitisation on BPCR
2.	Media and Technology	Use of interactive messaging technology
		Reading newspapers, watching television, and listing to the radio
		Mobile technology
		Use of media to deliver an educational Drama
3.	ANC counselling and health education	Structured counselling on birth preparedness and its complication
		Group educational programmes developed for families to promote BPCR
4.	Male involvement	Couple's communication and male participation in BPCR
5.	Multisectoral intervention	Targeted interventions at the community levels
		Targeted interventions at the health care provider levels
		Empowerment of health care providers

- **Community-based interventions**

Six studies from this scoping review focussed on community-level interventions, of which one study by Eze et al. (2020) successfully improved awareness and practice of BPCR strategies by addressing social norms or practices through behavioural change. Three other studies explored various interventions to deliver tailored health education on BPCR to the community and yielded a significant increase in awareness and practice of BPCR. One approach used community health workers (August *et al.*, 2016a); the other focused on enrolling pregnant women in forums which, amongst other activities, promoted seeking help early during an emergency (Bogale, Astatkie and Wakgari, 2019), while Shimpuku *et al.* (2019) used media to deliver an educational drama to MHC users. The remaining studies, conducted in rural India and Tanzania, revealed value in Continuous Community Training Programmes (Swain *et al.*, 2019; Moshi, Kibusi and Fabian, 2021). The key activities of one of the programmes were to conduct home visits, provide continuous sensitisation, and supervise birth preparedness training sessions.

- **Mass Media and Technology**

Three studies focused on the innovative use and evaluation of Mass Media and Technology to improve BPCR (Asp *et al.*, 2014; Santoso *et al.*, 2017; Masoi and Kibusi, 2019). The use of interactive messaging technology in a study by Masoi and Kibusi (2019) proved beneficial in raising women's awareness and birth preparedness. Important messages on danger signs and what to prepare for labour and childbirth were effectively delivered; hence the post-intervention result of knowledge and birth preparedness of women in the intervention group were significantly higher than those in the control group (Masoi and Kibusi, 2019). In addition, individualized responses were made possible as women could inquire about their various needs related to their pregnancy by sending text messages (Masoi and Kibusi, 2019). Asp *et al.* (2014) study was based on the background that awareness and knowledge, amongst others, increase due to exposure to media, which may lead to desirable public health outcomes. This was found to be true but only for women exposed to reading newspapers compared to those who watched television or listened to the radio. Women who read newspapers were more prepared for labour with at least three key actions for birth preparedness. The study also revealed that higher exposure to media, therefore the regular reading of newspapers, watching television and listing to the radio had no significant association with birth preparedness. The study by Santoso *et al.* (2017) used both technology and the conventional counselling method to provide health information and education. This study also yielded positive results in using technology to improve BPCR as those exposed to both counselling, and mobile technology were more knowledgeable than the control group who only received counselling.

- **ANC counselling and health education**

Studies that focused on education and counselling during antenatal clinic visits observed improvement in knowledge and attitudes of pregnant women as well as improved BPCR. These improvements were achieved through tailored educational programmes such as structured counselling on birth preparedness and its complications and group educational programmes developed for families to promote BPCR. (Shimpuku *et al.*, 2019; Shukla *et al.*, 2019). Identifying and organising specific information that promotes birth preparedness can benefit pregnant women in improving their knowledge of danger signs and awareness of BPCR.

- **Male involvement**

There was a significant increase in delivery at a health facility amongst women who communicated with and involved their partners in the study that explored the effects of couple's communication and male participation in BPCR. However, some of the elements of BPCR, such as saving money and choosing a birth companion, were not significantly associated with the involvement of a partner. (Sitefane *et al.*, 2020).

- **Multisectoral intervention**

The multisectoral study targeted interventions at the community and the health care provider levels. Several strategies, including home visits, radio spot messages and promotion of savings, amongst others, were community-focused interventions to promote BPCR. These interventions were delivered to the community by the community health workers. On the other hand, empowerment of health care providers was achieved through refresher training on emergency obstetric and newborn care, health managers' training on health service management, and supervision and mentoring of primary health workers. (Kananura *et al.*, 2017). A modest increase in the overall birth preparedness and knowledge of danger was observed with this approach.

Figure 3-3 below shows an overview of the number of studies that focused on a particular intervention to improve birth preparedness.

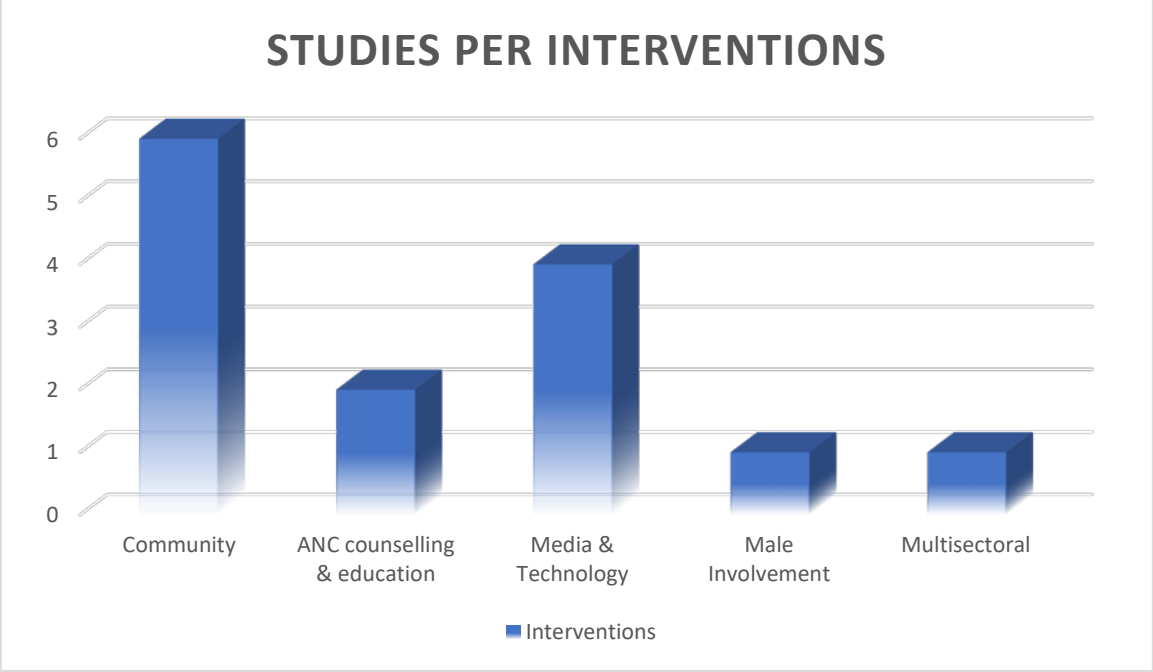

Figure 3-3: Number of studies per intervention

- **Influential factors and barriers of the BPCR strategy**

This scoping review considered six studies that identified the factors and barriers of BPCR. The most significant predictors of BPCR were associated with; the educational status of both the expectant woman and her partner, parity, frequent antenatal clinic visits of at least four times, antenatal education on danger signs during pregnancy, and socioeconomic status (Liga Timša *et al.*, 2015; Cheptum, 2018; Iyasu *et al.*, 2018; Izudi *et al.*, 2019; Iloghalu, Ugwu and Obi, 2020). Other important, influential factors included the partner's involvement during maternal care (Liga Timša *et al.*, 2015) and the type of health facility used (Cheptum, 2018). Poor use and uptake of the BPCR was noted amongst women who were unbooked or booked for ANC late and those who were uneducated. Late ANC booking, being unbooked, and the poor socioeconomic status of the expectant couple contributed as barriers to participation in BPCR (Iyasu *et al.*, 2018; Iloghalu, Ugwu and Obi, 2020).

3.8 DISCUSSION

This scoping review aimed to discover what would constitute a functional and locally relevant programme by exploring the success factors and interventions that improved BPCR strategy and identifying the barriers that hindered the uptake of this strategy. The data synthesis, particularly from sub-Saharan Africa and developing countries worldwide, indicated many important interventions that improved BPCR and factors that enhanced or hindered the BPCR uptake. The following is a discussion of these key findings.

3.8.1 Community-based interventions

Previously, many studies explored various interventions targeted at the community to improve the level of BPCR of MHC users. These interventions are inclusive of; the use of community health workers to offer home-based training programmes, pregnant women’s forums, behavioural change through addressing social norms and practices, and continuous community training programmes, and were effective in enhancing the awareness of the BPCR strategy among MHC users.

In low resource settings, such interventions can be beneficial in several ways. First, the use of community health workers can help address a chronic problem of a larger nursing staff turnover. It saves time and money to use community health workers as they can be trained within a shorter period and earn lesser wages than professional health workers (Fulton *et al.*, 2011). It can,

therefore, be said that the use of community health workers is a practicable and cheaper way to educate and promote the BPCR strategy amongst MHC users and their families.

Second, women's participatory learning groups are recommended by the WHO (2014) as a cost-effective strategy for reducing maternal and neonatal mortalities and have been reported to improve the BPCR status of MHC users significantly. The study by Bogale *et al.* (2019) in this scoping review shows that, of the 25.8% of women knowledgeable of danger signs, 20.7% participated in the pregnant women's group. Knowledge of danger signs is a lifesaving element of the BPCR strategy that allows women to act promptly with the advent of pregnancy-related danger signs, and as a result, get timely access to skilled health care. Similarly, Maskey et al. (2011) study shows that women who participated in learning groups had less risk of dying during pregnancy, birth, and postnatal than those who did not participate. These findings are consistent with a meta-analysis where a 55% reduction in MM was also observed in at least 30% of women who participated in learning groups. (Prost *et al.*, 2013). This is because these groups are tailored to promote the components of BPCR strategy, such as attendance of ANC, knowledge of danger signs and delivery in a health facility, among others. Pregnant women's forums empower women and serve as a platform where women can share their experiences, encourage one another, and presumably promote skilled birth attendance.

Finally, other community-focused interventions such as community behavioural change programmes can effectively increase the level of BPCR as those who are resistive can acquire knowledge that promotes participation in BPCR strategies. Many factors such as sociocultural beliefs and norms may influence the behaviour of MHC users, resulting in a low level of use and knowledge of the BPCR strategy. Adherence to some of the cultural beliefs of MHC users is an important impediment to participation in maternal care (Bishwajit *et al.*, 2017; Falade-Fatila and Adebayo, 2020). Community interventions that are socioculturally contextualised are potential behaviour modification actions that can result in positive health outcomes (Kumar *et al.*, 2012). The researcher observed that the study which targeted behavioural change (Eze *et al.*, 2020) by addressing social norms resulted in a better outcome of the BPCRS among pregnant women. This was, however, attributed to the higher level of education among the participants. Empowering women and instilling a sense of responsibility for their health by targeting their behaviour and providing targeted health education can result in the positive use of the BPCR strategy.

3.8.2 Mass Media and Technology

Various mediums were used to convey BPCR messages to the MHC users and their communities. These included radio, television, newspapers, and mobile phones. Although the study findings show that the use of mass media (radio, television and newspaper) and technology (various applications in mobile phones) generally resulted in significant improvement in knowledge and awareness of BPCR, Asp *et al.* (2014) did not find a significant increase in birth preparedness amongst women who listened to the radio's regular messages on BPCR. This lack of significant improvement could indicate that information should not just be provided but be conveyed in a manner that can be understood to influence behavioural change (Asp *et al.*, 2014). The expectations, perceived utility and individualisation of outcomes, among others, are some of the important variables that can affect the understanding of health information (Sørensen *et al.*, 2012). Therefore, it becomes imperative to carefully assimilate information to be accessed through mass media in a simple manner so that it will be understood and acted upon by the end-users.

On the other hand, other studies that used mass media to promote health outcomes found that mass media was a significant predictor of knowledge of HIV amongst women (Jesmin, Chaudhuri and Abdullah, 2013) and listening to the radio was associated with a higher chance of women delivering in a health facility (Kusuma *et al.*, 2018). As noted in this review, women who read newspapers were significantly associated with birth preparedness. These findings are consistent with Moinuddin *et al.*'s (2017) study, which revealed that reading newspapers was a significant predictor of being well prepared for birth. Being able to read indicates that literacy plays an important role in the knowledge and awareness of the BPCR strategy amongst MHC users. According to the World Population Review (2020), Johannesburg's urbanites can be assumed to be highly literate, with about 7% being illiterate and 3.4% having only primary education. This high literacy state provides an opportunity to liaise with local newspapers by publishing messages promoting the BPCR strategy. Further, the development of educational pamphlets on the BPCR strategy can be another effective way to reach literate MHC users.

The MomConnect application is an interactive mobile phone platform initiated in 2014 by the National Department of Health in South Africa to support maternal health outcomes (NDoH, no date). It is intended to allow pregnancies to be electronically registered as early as possible and allow MHC users to receive targeted health information and give feedback on the service they received. As in this review, other developing countries employed the use of various mobile applications such as the android application "Suami Siaga Plus" (Santoso *et al.*, 2017) and the

"Interactive mobile messaging alert system" (Masoi and Kibusi, 2019) to address the BPCR knowledge and awareness specifically. These two studies observed significant improvement in birth preparedness and knowledge of danger signs. With over 95 % participating clinics and health facilities and registering over 2 million women in South Africa, MomConnect provides an alternative to reach MHC users with targeted BPCR messages.

3.8.3 ANC counselling and health education

Antenatal care is a pivotal strategy of the Safe Motherhood Initiative, through which maternal and neonatal morbidity and mortality can be reduced. It is a basis for the provision of professional quality care to pregnant women and their children by preparing women for birth, screening for complications, provision of health education, among others, and thereby allowing for early detection and treatment of complications that may cause maternal and neonatal deaths (Fagbamigbe and Idemudia, 2015; Alanazy, Rance and Brown, 2019). It, therefore, becomes important that pregnant women register for ANC as soon as possible (WHO recommend within four months of pregnancy) to benefit from these services. When providing ANC health education and counselling, health professionals need to assimilate BPCR messages in a structured manner, taking into consideration not just the medical risks of the pregnant women but their personal and community life, which is inclusive of social deprivations and domestic violence (EBCOG Scientific Committee, 2015).

BPCR counselling and the provision of health education to pregnant women, their partners, and families are important in increasing the level of BPCR. Our review findings, which agree with other studies (Soubeiga, Sia and Gauvin, 2014; Izudi *et al.*, 2019; Silwal *et al.*, 2020), show that the level of BPCR significantly improved with structured educative counselling that was provided during the ANC visits. In addition, the lack of counselling and education on BPCR in pregnant women was associated with poor birth preparedness (Mutiso, Qureshi and Kinuthia, 2008; Ijang *et al.*, 2019). ANC clinic visits are important as they are the basis for providing professional health education and counselling to pregnant women and their families during pregnancy. It thus, becomes important that health professional ensures that messages on BPCR are adapted to meet various needs of pregnant women, including the socioeconomic status, and level of education, among others, to effectively influence their level of birth preparedness (Soubeiga, Sia and Gauvin, 2014).

3.8.4 Male involvement

Men play an important role in MHC as partners and parents and influence maternal health behaviour within their households and communities (Margaret *et al.*, 2006). A systematic study done in low to middle-income countries shows that women benefited from improved antenatal clinic attendance, an increase in birth at health facilities, increased maternal nutrition and improved birth and complication preparedness with men's involvement (Tokhi *et al.*, 2018). Similarly, this scoping review has revealed a significant increase in health facility delivery amongst women who communicated with and involved their male partners in MHC.

While it may be beneficial to involve men in MHC, careful considerations should be taken when incorporating men into maternal care as some studies have shown a negative association of men's involvement with women's autonomy (Mullany, Hindin and Becker, 2005; Kaji Thapa and Niehof, 2013; Tokhi *et al.*, 2018). On a similar note, this review did not find significant improvement in some of the elements of the BPCR, such as 'saving money' and 'choosing birth companions' when male partners were involved.

However, there is a wide range of constraints that male partners must deal with during their involvement in MHC. These constraints range from the health systems structure and processes involved in MHC clinics to individual-related factors, including overwhelming emotions (Chalmers and Meyer, 1996; Sapkota and Kobayashi, 2012; Brüggemann *et al.*, 2014; Kaye *et al.*, 2014; Lowe, 2017; Morgan *et al.*, 2017). For instance, male partners have perceived hospitals' health systems as unwelcome as the roles of expectant fathers were not defined (Iliyasu *et al.*, 2010; Kaye *et al.*, 2014) and the clinic hours unfavourable (Ganle and Dery, 2015) to accommodate male partners into MHC. Studies conducted in Ghana and Nigeria revealed that African fathers were concerned with the lack of physical space in maternal units, expressing that it is unfriendly and exclusively for women (Iliyasu *et al.*, 2010; Kwambai *et al.*, 2013; Dumbaugh *et al.*, 2014; Ganle and Dery, 2015; Ongolly and Bukachi, 2019).

In addition, Sapkota (2012) found that men were hesitant and experienced overwhelming emotions during the birth of their children due to a lack of prior preparation for childbirth. A cohort study conducted in Sweden revealed that 13.6% of first-time fathers were fearful of childbirth (Hildingsson *et al.*, 2014), while in the United States of America, men, particularly Blacks, were frustrated with healthcare systems and were concerned with unmet needs during pregnancy (Edwards *et al.*, 2020). These unmet needs include a lack of communication by health workers that

could have aided decision-making during pregnancy and birth (Edwards *et al.,* 2020). Additional challenges associated with fear of childbirth have been related to men perceiving childbirth as frightening, which in turn leads to poor support from their partners and possibly failure to transition to parent or fatherhood (Bergström *et al.*, 2013).

Health facilities and governments need to work together to address challenges faced by men so that men's involvement in improving the BPCR strategy can be fully utilized. This calls for a multisectoral approach which is discussed next.

3.8.5 Multisectoral intervention

The implementation of the BPCR strategy, like any other programme aimed to improve health outcomes, may be affected by several factors. Including; access to services by minority groups, the availability of respectful and client-centred care, enabling socioeconomic and political atmosphere, and culturally competent and aware services. (Coast *et al.*, 2016; Jones, Lattof and Coast, 2017; Karkee *et al.,* 2021). Some of these widespread factors that affect implementation can be overcome through the collaboration of health facilities and other governmental and non-governmental organisations, community leaders and the community at large (Solnes Miltenburg *et al.*, 2017). Apart from multi-stakeholder collaboration, Miltenburg *et al.* (2017) have also suggested that interventions be aimed at various health systems levels and ensure that there is no mismatch between interventions and the health system's capabilities and that programme messages are tailored to suit the local knowledge, and practices.

The findings in this scoping review, from a study by Kananura *et al.* (2017), which employed interventions at the community and health facility level, had a significant improvement (29% increase in the intervention group) in the overall awareness of the BPCR. However, not all components of the BPCR were positively affected as participants poorly identified means for transportation and the identification health facility for the delivery. This could be an indication that transportation means and access, or availability of choice for a health facility, were limited and thus, the government should build more accessible health facilities ensuring that transportation, such as ambulances, is made available. However, according to the same study (Kananura *et al.*, 2017), women who identified transport participated in money-saving groups and had their own transport. In addition, the author presumed that women did not find the need to identify transport due to the easily available transport, especially during the day.

Several studies that generally reported improvement in BPCR of MHC users had a stakeholder element, and all included women and their families. However, some of these studies involved communities (Skinner and Rathavy, 2009; Darmstadt *et al.*, 2010; Hodgins *et al.*, 2010; Midhet and Becker, 2010; Mushi, Mpembeni and Jahn, 2010; Turan, Tesfagiorghis and Polan, 2011; Kumar *et al.*, 2012) and a few addressed health care workers (Ahluwalia *et al.*, 2003; Hossain and Ross, 2006; Midhet and Becker, 2010).

3.8.6 Influential factors and barriers of the BPCR strategy

Although there is a wide range of factors and barriers affecting women and their partners' level of BPCR, several studies (Andarge, Nigussie and Wondafrash, 2017; Solnes Miltenburg *et al.*, 2017; Pun *et al.*, 2018; Azeze, Mokonnon and Kercho, 2019) identified a few common factors and barriers including the level of education, socioeconomic status, cultural beliefs and norms, health service delivery, ANC attendance and the parity of women. Understanding these influential factors in promoting BPCR and the barriers is important to guide the development of a functional programme.

- **Level of education**

Learning can be acquired in many ways. However, formal education has been positively associated with health (Ross and Wu, 1995; Robert A. Hahn and Truman, 2015). Hahn and Truman (2015) argue that education should be a valid tool for public health interventions as it is an important factor and a key contributing cause to health. Similarly, WHO (2006) stated that education has a higher potential to improve maternal health. The level of education is expected to influence the behaviour of health care users on health-related issues, and education as a tool for mental exercise teaches individuals to use their minds to reason, learn, think and solve problems (Robert A Hahn and Truman, 2015). Therefore, being educated is arguably an important attribute for an expecting couple to prepare for childbirth effectively.

Several studies have shown that education is an essential factor in improving the level of BPCR. For instance, a study by Azeze *et al.* (2019) shows that women who attended college and above were twofold aware of the BPCR compared to illiterate mothers. Educated couples were also noted to be more aware of the importance of maternal health care (Ghani *et al.*, 2019), while illiterate care users who had no or limited formal education were more likely to be unprepared for childbirth (Pun *et al.*, 2018). Perhaps the higher association between education and birth preparedness is related to the higher level of confidence and a more positive approach to problems noted in

educated women (Mumtaz and Salway, 2007). On the other hand, amongst a few studies that negatively associated education with BPCR, a study conducted in Nigeria showed that women with less than tertiary education were insignificantly more aware of birth preparedness than those with higher education (Anikwe *et al.*, 2020). This, however, was assumed to be due to women's probable lower social class; hence, their seemingly disadvantaged position made them more prepared than educated women (Anikwe *et al.*, 2020).

Health practitioners' promotion of educational programmes is crucial in improving BPCR strategies and advancing MHC. Evidently, educated couples were more confident and aware of the importance of MHC and approached problems positively (Mumtaz and Salway, 2007; Ghanbari-Homayi *et al.*, 2019). It is, therefore, important that programme messages and interventions are tailored to accommodate the intended group, with consideration of their local practices and knowledge (Solnes Miltenburg *et al.*, 2017). Multi-stakeholder involvement and formal education for women should be increased to improve the BPCR uptake (Solnes Miltenburg *et al.*, 2017).

- **Socioeconomic status**

The ability to save money is one of the measures of the BPCR strategy (Jhpiego, 2004). This money is needed for transport and other expenses incurred during labour and childbirth. The monthly income (Mulugeta *et al.*, 2020) and the socioeconomic status of the expectant woman and her partner determine their ability to save money in preparation for birth and the complications that may arise. Women from low socioeconomic status have been associated with a low level of BPCR (Pun *et al.*, 2018) compared to those of high socioeconomic status (Andarge, Nigussie and Wondafrash, 2017). This is due to the ability of women in the higher socioeconomic class to earn more money and, therefore, can save and arrange for transport (Andarge, Nigussie and Wondafrash, 2017). Women from this high class are likely to reside in urban areas where health facilities are accessible, and they have more opportunities to be educated during pregnancy (Anikwe *et al.*, 2020), unlike women from rural settings who have less access to information (Pun *et al.*, 2018). This makes high socioeconomic class women more aware and prepared for birth and its possible complications.

Lower socioeconomic status is a contributing risk factor for unwanted and unplanned pregnancy amongst adolescents (Worku and Woldesenbet, 2016). Although some studies have associated teenagers with an increased level of antenatal care attendance, which improves BPCR, unwanted pregnancies have resulted in increased abortion-related complications, particularly in sub-Saharan

Africa (Kirby, Laris and Rolleri, 2007). Unfavourable decisions associated with poor socioeconomic conditions are another factor leading to risky sexual behaviours among teenagers (Kirby, Laris and Rolleri, 2007; Mchunu *et al.*, 2012; Brahmbhatt *et al.*, 2014).

- **Cultural norms and beliefs**

Maternal health care practitioners in the modern world are faced with the challenge of providing care in a multicultural and global society (Jeffreys, 2008). This calls for culturally competent care providers, as quality health care can only occur within the client's own cultural context (Campinha-Bacote and Munoz, 2001; Jeffreys, 2008). A culturally competent care provider persistently strives to attain the ability to render appropriate care by working within the client's cultural context (Campinha-Bacote and Munoz, 2001). The BPCR strategy can be seen as a way of providing quality care as it improves the maternal birth outcome (Gudayu and Araya, 2019). It is, therefore, arguably important that maternal care practitioners are culturally competent to enhance their understanding of BPCR.

Several studies outline culture as one of the impediments to women and their male partners' participation in maternal health services (Vermeulen *et al.*, 2016; Worku and Woldesenbet, 2016; Xue *et al.*, 2018; Falade-Fatila and Adebayo, 2020). The family's dominant socioculturally defined roles, such as men being portrayed as the authoritative partners and women playing the nurturing role, promote negative attitudes toward men's participation in pregnancy-related care (Firouzan *et al.*, 2019). In societies where men are dominant in relationships, the community look down on them if they accompany their partners to seek maternal services (Ghani *et al.*, 2019; Falade-Fatila and Adebayo, 2020). This contributes to poor participation in BPCR strategies by men.

On the other hand, in some patriarchal societies, the utilization of health facilities and BPCR uptake by women can be low due to the cultural beliefs of men. These men are often decision-makers and may insist on home delivery as they believe their babies will be bewitched if delivered outside their homes (Ghani *et al.*, 2019). Some women rely on their families during pregnancy and do not want their male partners to be present during delivery (Firouzan *et al.*, 2019). This, however, does not only work against the effort to improve male participation in MHC but also the known evidence that ANC attendance (Gill *et al.*, 2017) and BPCR utilization (Islam *et al.*, 2018; Silwal *et al.*, 2020) increases if couples made decisions and planned together.

Adolescents who fall pregnant have been associated with late ANC booking and low attendance due to sociocultural norms that stigmatize teenage pregnancy out of marriage (Worku and

Woldesenbet, 2016). Poor ANC attendance and booking after four months are contributing factors to the low level of BPCR among the care users (Pun *et al.*, 2018; Smeele *et al.*, 2018; Aziz, Shams El-Deen and Allithy, 2020). Unfortunately, in sub-Saharan Africa, complications related to abortion are higher among these adolescents (Kirby, Laris and Rolleri, 2007), and this is likely a result of late ANC booking and poor attendance due to fear of being judged by the unappreciative society (Worku and Woldesenbet, 2016).

- **ANC attendance**

The WHO has included BPCR in the Basic Antenatal Care package (BANC) (Carroli *et al.*, 2001) as an intervention that can help reduce maternal and neonatal mortalities (Silwal *et al.*, 2020). It is, therefore, important that MHC users are well informed about this strategy to improve the outcome of birth in MHC settings. Studies show that ANC attending women are more likely to be prepared for birth (Andarge, Nigussie and Wondafrash, 2017; Aziz, Shams El-Deen and Allithy, 2020; Silwal *et al.*, 2020). This is true because ANC visits provide the care users with knowledge and information on the BPCR, enabling them to be more prepared (Andarge, Nigussie and Wondafrash, 2017; Pun *et al.*, 2018; Silwal *et al.*, 2020).

Poor ANC attendance leads to low levels of BPCR. This is evident in many studies conducted in sub-Saharan Africa, which showed that women who booked late and had less than four ANC visits were not as prepared for birth as those who booked early and had four or more visits (Worku and Woldesenbet, 2016; Endeshaw, Gezie and Yeshita, 2018; Kalisa *et al.*, 2018; Pun *et al.*, 2018; Aziz, Shams El-Deen and Allithy, 2020). This is attributed to knowledge and information shared between care users and health care providers during ANC visits, and therefore, counselling sessions offered to care users during ANC are important in BPCR (Silwal *et al.*, 2020). Pregnant women identified health care educators as one of the most effective sources of information that improve their level of BPCR (Zepre and Kaba, 2016) so, it is important that early booking and utilization of ANC is emphasized.

On the other hand, attendance and awareness of ANC among men in a study conducted in Nigeria were noted to be good despite the challenges they faced, including social stigma, job demands and long waiting hours at care facilities (Falade-Fatila and Adebayo, 2020). These men were conversant with ANC, unlike in South Africa, where only 14% of men attended ANC despite a high percentage (92%) of women preferring to attend ANC with them (Yende *et al.*, 2017). The South African men reported a lack of ANC knowledge even though there is generally a good ANC attendance rate in

South Africa (Statistics South Africa, 2015). Lack of knowledge of BPCR is a contributing factor to lower BPCR (Zepre and Kaba, 2016; Yende *et al.*, 2017; Endeshaw, Gezie and Yeshita, 2018; Xue *et al.*, 2018). Therefore, program messages should be tailored to accommodate both the woman and her male partner, focusing on enhancing BPCR information (Gill *et al.*, 2017; Rahman *et al.*, 2018).

In South Africa, ANC attendance statistics are not regularly updated (Massy *et al.*, 2015). However, in 2012 there was about 90% ANC attendance which improved to 93% by 2014 (Gumede *et al.*, 2017). This is suggestive that 10% and 7% of women did not receive ANC in 2012 and 2014, respectively, which perhaps contributed to a slow decline in maternal mortalities (2000 deaths in 2010 to 1500 deaths in 2015). Furthermore, ANC attendance in inner-city Johannesburg had a lower (almost 5%) rating compared to the national levels (Gumede *et al.*, 2017).

- **Parity**

It is expected that the more experienced women should be better prepared for birth and its probable complications. However, several studies show that multiparous women were less likely to be prepared for birth and its complications than primiparae women (Andarge, Nigussie and Wondafrash, 2017; Asrat *et al.*, 2019; Tiruneh *et al.*, 2019; Anikwe *et al.*, 2020). This could be related to their previous history of normal and uncomplicated deliveries as it has been shown that history of previous complications (Asrat *et al.*, 2019) such as bleeding (Ekabua *et al.*, 2011) and stillbirths (Hiluf and Fantahun, 2008) lead to better birth preparedness. Women who had an uncomplicated birth perhaps feel more competent and have no desire to prepare for labour. Anikwe *et al.* (Anikwe *et al.*, 2020) alluded to this lack of preparedness by multiparous women to poor ANC education during previous pregnancies. This implies that ANC should focus on quality care ensuring that women are well informed on BPCR with every visit.

Contrary to most studies, multiparity was associated with good BPCR (Ekabua *et al.*, 2011; Kamineni, Murki and Kota, 2017; Kiataphiwasu and Kaewkiattikun, 2018). The multiparous' knowledge of danger signs, particularly vaginal bleeding, enabled them to save money in preparation for the inherent risk of pregnancy, as noted in a study conducted in Nigeria (Ekabua *et al.*, 2011). Mazumdar *et al.*(2014) noted that multiparous women knew BPCR events, although they were less likely to attend the first ANC visit. In order for the awareness of BPCR to result in good pregnancy outcomes, health practitioners need to encourage multiparous women to utilize the

BPCR strategies regardless of their previous normal birth experience since they are amongst the most susceptible to obstetric complications (Mazumdar *et al.*, 2014).

On the other hand, primiparity is a significant determinant of BPCR (Andarge, Nigussie and Wondafrash, 2017; Asrat *et al.*, 2019; Anikwe *et al.*, 2020). This has been suggested to result from excitement about being pregnant and a higher level of education among primigravidae who participated in a study in Ethiopia (Andarge, Nigussie and Wondafrash, 2017). In addition, the lack of experience by these first-time mothers made them more prepared and willing to acquire more knowledge on BPCR due to the perception of the high risk associated with primigravity (Andarge, Nigussie and Wondafrash, 2017; Asrat *et al.*, 2019).

- **Health service delivery**

The accessibility of health facilities, their systems and physical structures are some of the key components of the health service delivery that can help improve the BPCR amongst MHC users. Low levels of BPCR have been identified in rural areas where care users must travel long distances to access care (Debelew, Afework and Yalew, 2014; Markos and Bogale, 2014; Pun *et al.*, 2018). This makes it difficult for care users to access information that could help them to better prepare and understand the importance of BPCR. In addition, rural dwellers are expected to be of a low socioeconomic status which compounds their problem, as a lack of finances restricts them from saving money in preparation for birth and the complications that may arise.

However, contrary to the findings of most studies (Debelew, Afework and Yalew, 2014; Markos and Bogale, 2014; Pun *et al.*, 2018), women residing in rural Egypt were more prepared for birth than those in urban settlements (Aziz, Shams El-Deen and Allithy, 2020). This higher preparedness was attributed to the awareness of the challenges faced by rural residents, such as long distances and insufficient health facilities in their area. Health costs in some settings, particularly in sub-Saharan Africa (Zepre and Kaba, 2016; Kalisa *et al.*, 2018; Greenspan *et al.*, 2019), is also an accessibility issue that impedes care users to take part in BPCR strategies. This leads to poor ANC attendance, where users can benefit from the information that can improve their knowledge of BPCR.

Health systems and structures are important factors that can enhance or impede the level of BPCR in care users. Health systems in health facilities are not inclusive as policies limit men's involvement (Greenspan et al., 2019) and are perceived as unwelcoming because the roles of expectant fathers were not defined (Iliyasu *et al.*, 2010). African men, in studies done in Ghana and

Nigeria, revealed that fathers were concerned with the lack of physical space in maternal units, expressing that it is unfriendly and exclusively for women (Iliyasu *et al.*, 2010; Kwambai *et al.*, 2013; Dumbaugh *et al.*, 2014; Ganle and Dery, 2015; Ongolly and Bukachi, 2019). Long waiting times (Gibore *et al.*, 2019; Gibore, Bali and Kibusi, 2019; Falade-Fatila and Adebayo, 2020) and unfavourable clinic hours (Ganle and Dery, 2015; Gibore, Bali and Kibusi, 2019) are important barriers for participation of men in maternal care. Moreover, lack of privacy and respect in health facilities are system and structural concerns leading to low levels of BPCR among care users (Andarge, Nigussie and Wondafrash, 2017). Abuse and disrespect of women during labour (Kalisa *et al.*, 2018) and the previous negative experience by care users (Vermeulen *et al.*, 2016) hinder the effort to access skilled birth attendants and men's involvement in MHC.

3.9 CONCLUSION

This scoping review explored the existing literature to discover the success factors, interventions and barriers that improved and hindered the BPCR strategy, respectively. The aim was to explore what would constitute a functional and locally relevant programme that will guide the awareness and utilization of the BPCR strategy by MHC users. The details of the scoping review were discussed in this chapter, and its findings were used together with the input from MHC users and midwifery experts to develop the programme, as detailed in chapter 5. The following chapter reveals and discusses the finding from the interview with MHC users.

4 PHASE 2-FINDINGS AND DISCUSSION OF THE NOMINAL GROUP WITH MHC USERS.

4.1 INTRODUCTION

This chapter presents the findings from a nominal group interview with MHC users. These findings will be discussed to establish their link to the study concept (BPCR) and how they can influence the development of a functional and locally relevant programme that can improve birth preparedness amongst MHC users.

4.2 NOMINAL GROUP TECHNIQUE INTERVIEW-MATERNAL HEALTH CARE USERS FINDING

Figure 4-1 below gives an overview of the five most rated ideas derived from the interview with MHC users. These ideas presented as interventions needed guided the analysis of the group's discussion to obtain in-depth information regarding MHC users' input. Counselling was the most frequent answer that was perceived as effective in helping women and their partners to be prepared for childbirth. This was followed by the partner's involvement which attracted 15 points. The use of social media was third, followed by information to be provided and lastly, the staff attitude as illustrated in Figure 4-1 below.

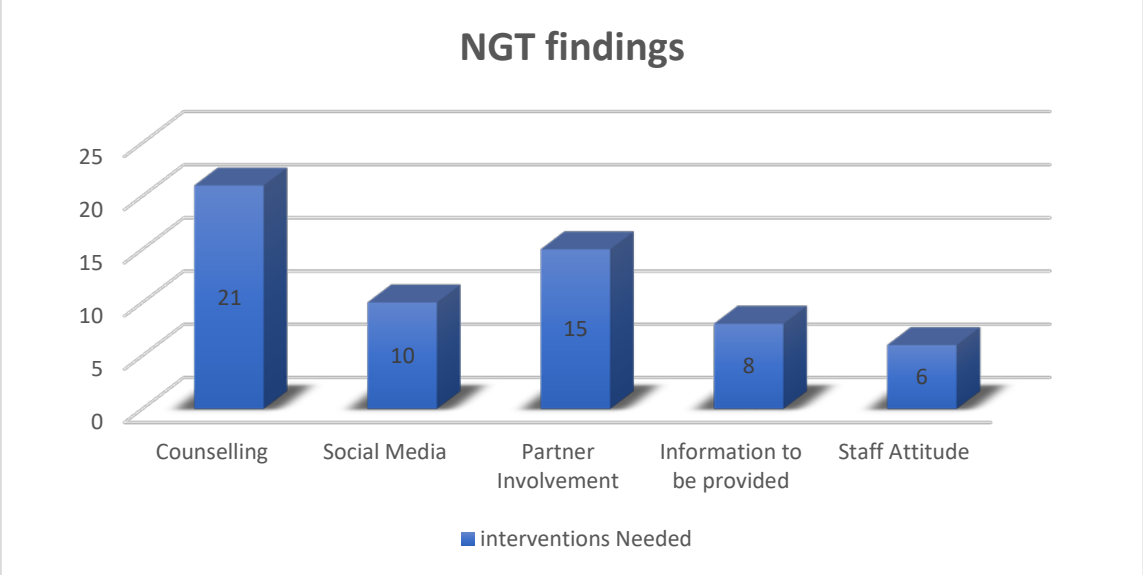

Figure 4-1: findings from the nominal group interview with MHC users.

- **Counselling**

  Counselling was rated highest amongst the participants, and two axial codes, including unplanned pregnancies and lack of knowledge, were noted. Participants believed they could

benefit from counselling as most of the time; they fall pregnant without having planned to do so. However, they did not state how counselling could help them prepare for labour. One participant stated, *"I think sometimes, some of the mothers are not prepared to have babies, so in that way, they discover when it is too late that they are pregnant."* (Participant C). It can, therefore, be assumed that unplanned pregnancies may lead to late ANC booking, which, as a result, deprive the women of getting vital information that can enable them to prepare for childbirth and complication that may arise. Lack of knowledge about pregnancy was also noted as a basis for counselling.

Recalling from their experience, some participants expressed a lack of knowledge of pregnancy and therefore, being counselled and informed about pregnancy could probably help them prepare for birth. The need for counselling was expressed by one of the participants when she said, *"You need to be sat down, talked to and what to expect and how you are going to deal with it…If you are to continue with the pregnancy, they tell you a lot about both pregnancy and after pregnancy."* (Participant A)

- **Social media**

  The use of social media was seen as helpful as it can save women time and money. Participants expressed that sometimes they would visit the clinic, spending much money on transport, only to be told to come back some other day. *"Sometimes you get to the clinic, and the nurse tells you they have taken too many people, and you have to go back, something like that instead of them notifying me that on this particular day we have got such people so we cannot add more people to such people until they are sure you are not coming."* (Participant E). They stated that social media could make communication easier between the health professionals and them, thereby saving them time and money as they would have been made aware of any changes that could affect their schedules. *"They can remind us."* (Participant B). The main axial code associated with social media was time management. However, some participants also stated that social media could help provide information during pregnancy.

- **Partner involvement**

  Some participants expressed the need to have their partners during the ANC visit as a way of support, and they both could be educated on pregnancy, as seen in the following excerpts. "*Show more support, 'the partner' spending time basically means he is showing support."*

(Participant D). *"…The must be here sitting with us."* (Participant A). *"But maybe once in a while, they can say come with your partner. They can come to the hospital so that we both get educated about this pregnancy."* (Participant C). Men's involvement in maternal care has long been introduced and proven to benefit women, children, and labour outcomes. Health care providers can encourage women to be accompanied by their partners so they can both be taught about pregnancy and prepare for labour. These will help overcome some of the concerns raised by the participants, such as lack of knowledge about pregnancy by their partners. One participant stated her partner responded, *"**Haee! Haee!** You are talking to me about something, it doesn't concern me, I am a man"* (Participant C) when she tried to share with him the information she received from the clinic about her pregnancy. The axial codes noted under the partner involvement were lack of knowledge and interfamilial relationship. Participants expressed difficulties relating with their partners and said they did not listen to them. They stated that men believe their role is to give them money, drop them at the hospital and leave. It appears that women want men to fully participate in their pregnancy as one participant stated, *"He needs to be there throughout the whole process for him to know **kuthi*** (that) *okay, when this is happening this is what I need to do. Not to say now what must I do? And…"* (Participant C)

- **Information to be provided**

  Participants express a lack of knowledge on childcare and being a good parent, the risks involved in pregnancy, and things to do and not to do when pregnant. These are the axial codes that can help us understand what important information could be compiled when developing a function BPCR programme. Participants understood that reliable information on childcare and good parenting could be attained in health care centers as the community members sometimes provided information that could harm their babies more. In response to the question, where can you find information on good parenting? one participant stated: *"**khona la**,* (right here*) where else? Because some of us don't have mothers, we don't have grandmothers… So, they need to teach us, they are certain things you should not do as a parent, and they are certain things you can do as a parent."* (Participant A) One participant narrated that her baby developed jaundice, and her grandmother told her to express milk and water into the baby's yellow eyes as the baby did not sleep well. In addition, some participants wanted to know more about labour and childbirth, especially the risk involved in pushing the baby out before time. *"When I was with my mama, she was like, once you*

are in labour, you are not supposed to push, and the doctor didn't say you must push, so I want to learn like why?" (Participant B)

Another expressed that pregnancy does not always go as planned, and having the knowledge to recognize abnormal changes is important for them.

- **Staff attitude**

  The staff attitude was the least selected theme that can improve the birth preparedness of MHC users probably because most participants stated to be generally satisfied with staff attitude. *"Sometimes you get that nurse that loves her Job-like nobody's business. She will go an extra mile to assist you"* (Participant C). *"There are very nice people, but there are some, they are not the same… out of that 10%, there is that one rotten apple"* (Participant A). However, participants express concern when talking about the few staff member who ignored their privacy; *"Like there is a thousand of people standing there, and she is like "**Hoo!*** (Wait!) *Help me, and this person doesn't know her surname"* (Participant C). The same participant also expressed a lack of empathy; "*But sometimes they just say whatever they want to say to the poor person. Maybe she is already, the husband has left her with that pregnancy and **wena,*** (you) *you come and add more stress to her*." Some wondered if staff members attend workshops to refresh their work ethics; "*do they go for workshops? Because I believe, taking this out of profession, from the university they teach you work ethics as a nurse…,"* (Participant A). *"Are they going for workshops? Are they going for workshops?"* (Participant B). Although Staff attitude is not an intervention for improving birth preparedness, it will benefit MHC users if staff members are trained on customer care and work ethics.

4.3 DISCUSSION

The interview with the MHC users identified several factors that the participants considered important for their knowledge and awareness of the BPCR strategy. However, they did not specify how these factors would influence their preparedness for birth and the inherent risks in pregnancy. The following discussion establishes the link between the BPCR strategy and how the raised factors influence the latter. However, a brief discussion will be given on counselling, social media and partner involvement as these factors have been discussed in chapter three under the subheadings, ANC counselling and education, Mass media and technology and male involvement, respectively.

4.3.1 Counselling

There is little knowledge of BPCR, particularly in low resource settings (Bitew, Awoke and Chekol, 2016). The lack of formal counselling classes aimed to raise awareness of BPCR among women could be attributed to the dearth of knowledge on the BPCR components, including knowledge of danger signs, saving money and identifying means of transportation (Nithya, Dorairajan and Chinnakali, 2017). Focused and structured counselling plays a significant role in the desired outcomes of pregnancy, particularly the practice outcomes, knowledge, and attitude of pregnant women (Devkota *et al.*, 2017; Shukla *et al.*, 2019). Besides, counselling can be a beneficial tool in overcoming some of the sociocultural practices that contribute to poor access to emergency maternal and newborn care (Ishola *et al.*, 2017). Several studies (Bitew, Awoke and Chekol, 2016; Ishola *et al.*, 2017; Shukla *et al.*, 2019; Silwal *et al.*, 2020) show pregnant women's literacy on BPCR resulted in significant improvement in BPCR knowledge through counselling.

The researcher identified that the lack of knowledge and unplanned pregnancies were some of the raised concerns among the participants of an interview conducted with MHC users. This could be an indication that MHC users are not well informed or counselled on BPCR, which is a vital strategy to reduce MM (Kalliath *et al.*, 2019). Nonetheless, there are approximately 14 million unplanned pregnancies in Sub-Saharan Africa (Gipson, Koenig and Hindin, 2008). A significant portion of these pregnancies result in abortion, most of which are unsafe (a global estimate of 20 million, of which 97% is in developing countries (Ameyaw *et al.*, 2019)) and other detrimental outcomes including maternal deaths, low birth weight, spontaneous abortion, risk of congenital abnormalities, prematurity (Gipson, Koenig and Hindin, 2008). In addition, babies born from unplanned pregnancies were found to be less likely to be breastfed (Gipson, Koenig and Hindin, 2008).

Poor knowledge of contraceptives is among the wide ranging cause of unintended pregnancies (Ameyaw *et al.*, 2019). BPCR knowledge includes discussing family planning with mothers and their partners and advising on available contraceptive methods. To improve pregnancy outcomes and reduce MM, health service providers need to address the poor knowledge that mothers have expressed and strengthen targeted and contextualized BPCR messages.

4.3.2 Social media

Health education provided during the ANC clinic visit is a conventional method for health professionals to prepare pregnant women for childbirth (Sanders and Crozier, 2018). However,

today technology plays a significant role in providing information to MHC users through various platforms, including mobile apps, mass media and the internet. These sources of information affect how women prepare for birth as they influence their childbirth expectations (Sanders and Crozier, 2018). With mobile phones being the commonest source of information (Kalliath *et al.*, 2019), health educators can use this platform to provide structured and contextualized messages to raise knowledge and awareness of BPCR.

4.3.3 Partner involvement

The importance of partner involvement in MHC and its desired outcomes is well documented (Margaret *et al.*, 2006; Royal College of Midwives, 2012; Redshaw and Henderson, 2013; WHO, 2015b; Bitew, Awoke and Chekol, 2016; Tokhi *et al.*, 2018). However, there are many challenges that men must deal with in maternal health care settings, ranging from health facilities systems to their sociocultural practices and beliefs. Further discussion on these challenges and how partner involvement influences the BPCR strategy were discussed in chapter 3.

The interview with MHC users revealed some of the pregnant women's concerns regarding partner involvement. As noted in several other studies (Kura, Vince and Crouch-Chivers, 2013; Kwambai *et al.*, 2013; Davis *et al.*, 2016; Nesane, Maputle and Shilubane, 2016), men believe that pregnancy is a women’s domain and are reluctant to participate in MHC and only assisting their pregnant partners with financial needs and other culturally defined roles. It is also assumable that healthcare professionals pay little or no attention to encouraging male partners to participate in MHC, as some participants pointed out the need to be encouraged to bring their partners. Therefore, it becomes crucial that health care professionals incorporate male partners in programme messages to improve the BPCR strategy among MHC users. In addition, health systems and settings need to be upgraded to include and define men’s role when participating during pregnancy and beyond.

4.3.4 Information to be provided

The MHC users’ knowledge and awareness of the BPCR strategy plays an important role in reducing MM, as the delays in seeking skilled maternal health care and reaching a health care facility during emergencies can be avoided. The researcher noted that participants in an interview with MHC users were concerned with a lack of knowledge. Similarly, several other studies revealed that a vast majority of women are not informed about the BPCR strategy (Markos and Bogale, 2014; Moshi *et al.*, 2018; Smeele *et al.*, 2018), and this lack of BPCR knowledge and use contributes to MM (Ijang *et al.*, 2019).

The BPCR strategy is a comprehensive package that involves planning for normal delivery, promoting timely access to skilled birth attendants, and anticipating actions to be taken in case of an emergency. Jhpiego's BPCR manual (2004) provides a 'conceptual model' (see Figure 4-2) of how the BPCR strategy may influence the use of skilled birth attendants. Several key elements are addressed to help women, their partners, the community, and health providers to improve the BPCR level. These include the side of the health care user and that of the health care provider. (Jhpiego, 2004)

- **The health care user**

The delays in seeking and reaching skilled care can, to a larger extent, be mitigated by raising awareness of the BPCR strategy amongst women, their families, and the community at large. Some of the recommended elements and key messages include knowledge of danger signs, identification of the nearest health facility in case of an emergency, saving money, getting supplies for birth, identification of a birth companion, and arrangements for transportation, amongst others. (Jhpiego, 2004).

- **The health care provider**

The health care provider plays an important role in addressing the consumer's needs of the rendered services. Apart from focusing on the health care users to overcome the above-mentioned delays, the provider, the facility, and the policymaker need to be ready to mitigate the delays in providing quality care. This will ensure that the care users' effort of timely seeking and reaching skilled care is not in vain and is met by poor quality health service delivery, resulting in undesirable outcomes. Therefore, health facilities and providers should be welcoming and ready to attend to birth and the probable complications and ensure that skilled birth attendants (nurses, midwives, and doctors) are available and have the necessary skills and knowledge to stabilize and or refer women with complications. The human resources, supplies, infrastructure, and equipment should be readily available in health facilities to deal with both normal and complicated births. In addition, service delivery should be strengthened through policies that are client centered-(such as a policy for respectful maternal care services) and promotes the use of skilled health providers. (Jhpiego, 2004)

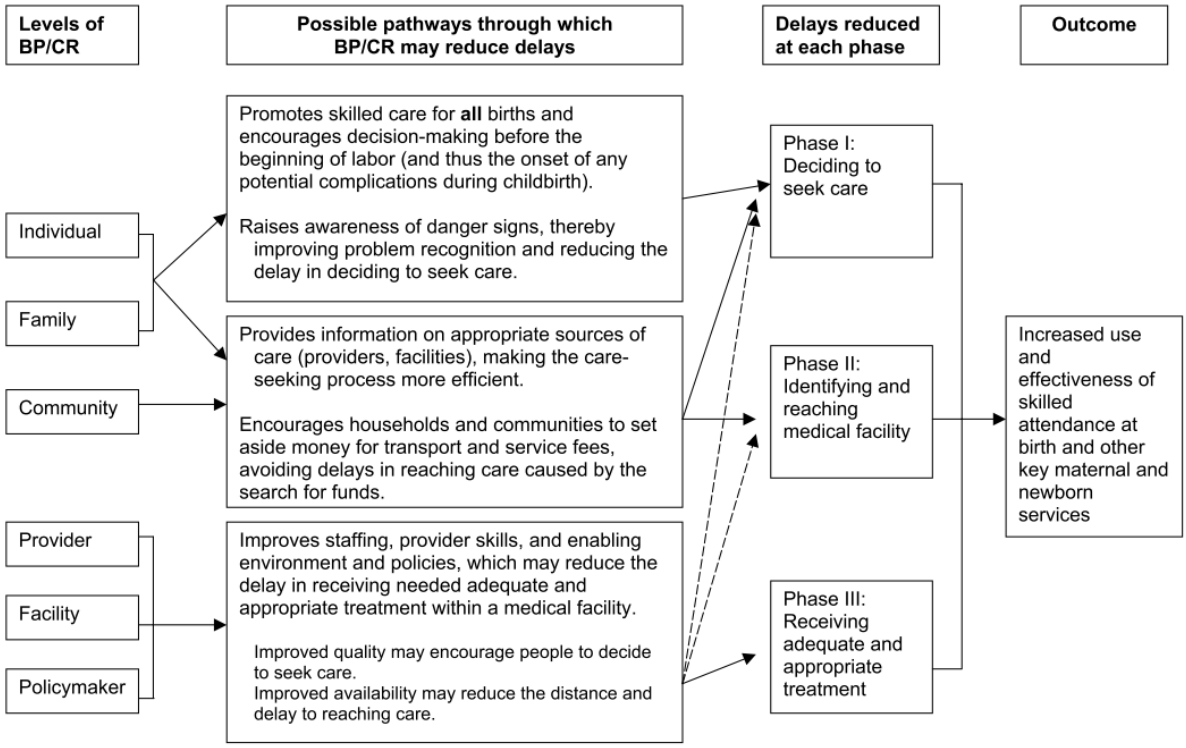

Figure 4-2: Conceptual Diagram of How BP/CR May Increase the Use of Skilled Care. Source: (Jhpiego, 2004)

4.3.5 Staff attitude

The Jhpiego BPCR manual (2004) entails that health providers and facilities should be welcoming as part of the provision of quality care. This refers to the cleanliness of the health facilities and the behaviors of the staff members in general. Many studies (McMahon *et al.*, 2014; Kujawski *et al.*, 2015; Warren *et al.*, 2017; Kalisa *et al.*, 2018) have reported abuse, disrespect and neglect of women during labour and childbirth, citing nurses and midwives as the main perpetrators. Sadly, in other instances, midwives have justified their physical abuse (slapping women on their thighs) as a way of making women focus on the delivery process (Warren *et al.*, 2017). Participants in our interview raised concerns ranging from poor work ethics, lack of confidentiality and disrespect from health professionals. Similarly, other women have also reported the abuse of their rights to confidentiality, particularly during labour, and they complained of dirty maternity units (Warren *et al.*, 2017; Kalisa *et al.*, 2018).

The abuse and disrespect of women contribute to the low utilization of skilled birth attendants (Kujawski *et al.*, 2015; Kalisa *et al.*, 2018) and significantly counteract the efforts of the BPCR strategy. Women who experience abuse are less likely to use the same facility in the future

(Kujawski *et al.,* 2015), which limits their future choice of locations for giving birth. Poor management, demotivation of health professionals, and a lack of supplies and resources contribute to an unpleasant birth experience for mothers (Kalisa *et al.*, 2018), which results in low utilization of the BPCR strategy. In order to raise the uptake of the BPCR strategy, health providers need to improve communication, emphasize clients' rights to respectful care, and maintain work ethics and client-centered care (McMahon *et al.*, 2014; Kujawski *et al.*, 2015; Kalisa *et al.*, 2018). Maternal health service delivery should be appealing to MHC users with interpersonal relations at the center of quality care.

4.4 CONCLUSION

This chapter presented the findings from an interview with the MHC users. The input from MHC users is important in guiding the development of a programme in a local context. Several factors considered beneficial to raise awareness and utilize the BPCR strategy were discussed. Although the interview participants did not clearly state how these factors would help them be more prepared for birth and its probable complications, a link between these factors and the BPCR has been established. The finding from this chapter will be used with the scoping review findings to develop a functional and locally relevant programme that will enhance the utilization of the BPCR in Johannesburg.

5 - INTEGRATION OF THE FINDINGS AND THE DEVELOPMENT OF THE PROGRAMME USING THE ADDIE MODEL

5.1 INTRODUCTION

This chapter employed the ADDIE model (explained in chapter 2) to develop a programme using the scoping review's findings and the input from the MHC users. A brief recap and an explanation of how these phases were used to develop the programme are given. The Analysis phase of this model considered both the scoping review and NGT interview findings to guide the Design and Development phases. The last two phases (implementation and evaluation) are beyond the scope of this study and were not included. However, the developed programme was presented to a panel of midwives seeking their expert opinion if the programme would work (utility). Their input helped to refine and optimize the programme. Although chapters 3 and 4 respectively provided more details on the findings from the scoping review and NGT-interview with MHC users, the following table (Table 5-1) seeks to give a summary of the lesson learned, providing the basis for selecting the most suited interventions and the contents of the developed programme. Understanding the relevance of these interventions and their constraints concerning the study setting is also provided in the table to help later prioritise the programme's content (See Figure 5-1).

Table 5-1: The interventions and lessons learned from the scoping review and the NGT-interview with MHC users, their challenges and how they are relevant to an urban area.

FINDINGS	LESSONS LEARNED AND THEIR RELEVANCE TO URBAN SETTINGS	CONSTRAINTS CONCERNING THE STUDY LOCATION
PHASE 1: SCOPING REVIEW		
1. Identified interventions		
Community-Based Interventions • continuous training programmes • pregnant women's forums • addressing social norms through behavioral change • supervised training sessions on BPCR	All the identified interventions were effective in increasing BCPR knowledge and or use. Supervised and Continuous training sessions on BPCR can be adopted to be given during the ANC visit. Economic empowerment of MHC users can improve their BPCR. Training of volunteer community health to educate	These studies were conducted in rural settings, implying that the finding may not all be suited for the busy lifestyle of an urban area like Johannesburg.

	MHC users on danger signs and BPCR components. Regular sensitization on BPCR components improves the utilization of the strategy. Education on dangers promotes seeking care early during pregnancy Women can be encouraged to form mobile phone-based BPCR discussion groups on topics provided by health providers.	
Mass Media and Technology • Use of interactive messaging technology • Reading newspapers, watching television, and listing to the radio • Mobile technology • Use of media to deliver an educational Drama	Higher exposure to media improves BPCR. Most urbanites own a mobile phone (National Department of Health, 2015) and therefore using interactive communication can be well suited for an urban area. A television set can be sought to play educative BPCR messages while MHC users are awaiting care. Johannesburg has a good (98.7%) see (City has most literate adults in country (iol.co.za)educational status, development of a news pamphlet with targeted key messages on BPCR can benefit the literate majority Radio stations are convenient and can be contacted to air various BPCR key messages	Although most MHC users own a mobile phone, those who do not have a phone will be disadvantaged. The MOU where the study was conducted is in inner-city Johannesburg, where some of the clients are asylum seekers who are faced with many challenges; owning a phone may be a luxury to them. Sourcing funds to buy additional equipment like a television or subscribing to a radio station may be a financial challenge to the MOU. Not all MHC users can read, and if BPCR messages are provided in pamphlets, they will not reach all
ANC Counselling and Education • Structured counselling on birth preparedness and its complication	ANC clinic visit possibly provides a more practicable way to address MHC users on BPCR due to a higher attendance rate.	As the MOU has limited human resources and a higher clientele volume, new challenges may emerge with extra programmes.

• Group educational programmes developed for families to promote BPCR	Counselling on danger signs during ANC visits improves birth preparedness The focus should be more on developing focused and structured BPCR programme messages that are relevant and are in a local context, to be provided during these clinic visits	Structural constraints may limit the accommodation of families in the MOU. Reaching family groups at their homes may prove difficult due to the busy lifestyle of the city, and it may add to more resource challenges.
Male Involvement • Couple's communication and male participation in BPCR	Most men are not knowledgeable on MHC in general, but their participation is linked with better outcomes of BPCR. As financial providers, men can ensure the birth preparedness of their partners as economic stability is linked with improved BPCR status. Improving communication between couples can improve BPCR, and some studies successfully used invitation letters to reach men.	Structural constraints may limit the accommodation of men in the MOU. Sociocultural beliefs and norms may impede men's participation in MHC. At the time of this study, the Covid-19 pandemic is a limiting factor for men's participation in MHC
Multisectoral interventions • Targeted interventions at the community levels • Targeted interventions at the health care provider levels • Empowerment of health care providers	Many factors that impede or facilitate BPCR, including the level of education, socioeconomic status, cultural norms and beliefs, and health service delivery, need a multi stakeholders' involvement to address these wide-ranging factors	It may take a long time before all governmental, non-governmental organizations and community leaders work harmoniously to fight all challenges faced by MHC users.
2. Influential factors and barriers of the BPCR strategy		
• **Level of education**	The level of education determines the BPCR status of MHC users. women who at least have primary education or higher are associated with high status of BPCR as compared to those who have no education Johannesburg has a good (98.7%) educational status, development of a news	The MOU does not have a direct role in the educational status of MHC users, as most of the responsibility lies with the South African National Department of Basic Education. However, the early identification of illiterate MHC users can help determine their pregnancy's learning needs

	pamphlet with targeted key messages on BPCR can benefit the literate majority	and BPCR status. This requires the midwife to pay special attention, during assessments, to the educational status of women as part of individualizing their care. MOUs can engage other stakeholders to improve the literacy of MHC users.
• **Socioeconomic status**	BPCR requires that women save money so they can travel to the health care facility promptly during emergencies and buy baby clothes. Poor socioeconomic status is associated with low levels of BPCR status. The unemployment rate was at 32.7% in the first quarter of 2020 in Johannesburg, and 32.42% of the residents were living in poverty in 2019 (Nemavunde and Khetho Lomahoza, 2020)	In assessing the socioeconomic statuses of MHC users, the health care professionals need to refer early to the social workers to ensure that women from this class are prepared and ready for birth and its probable complications. Therefore, MOU should always have a functional multi-professional team. Economic empowerment and the development of money-saving and emergency transport schemes are other ways to improve MHC users' preparedness for birth and its probable complications
• **Cultural norms and beliefs**	Mostly, the male partners are affected by the cultural practices and norms in participation in MHC. However, these male partners are found to be more beneficial in improving BPCR and pregnancy outcomes in general. There is a wide range of ethnicities in Johannesburg, including 13.1% international migrants, of which the majority (78%) are from the Southern African Development Community (SADC), and just over 30% are immigrants from other provinces of South Africa	MOU should ensure that health care professionals are culturally aware and competent in dealing with MHC users, particularly those residing in Johannesburg, which has various ethnicities, including foreign nationalities. Empowering health care professionals with cultural skills can help improve male participation in MHC

	(Nemavunde and Khetho Lomahoza, 2020)	
• **ANC attendance**	MHC users who had four or more ANC visits had a higher status of BPCR. Poor ANC attendance is associated with a low level of BPCR. Male partners are willing to participate in MHC, although their roles are not always defined. The ANC attendance in Johannesburg is about 5% lower compared to national levels	When providing ANC health education and counselling, health professionals need to assimilate BPCR messages in a structured manner, considering the medical risks of pregnant women and their personal and community life, inclusive of social deprivations of domestic violence. Assessment of all the BPCR status can be done at this stage to provide the basis for individualising care.
• **Parity**	Multiparous women who had previous normal deliveries are less likely to be prepared for birth and its probable complications compared to primiparous women. However, some studies noted that multiparous women were knowledgeable of BPCR even though they were less likely to attend the first ANC visit. The lack of knowledge of the primiparae women, their higher educational status and excitement about birth makes them more prepared for birth and its complication. The teenage pregnancy rate in Gauteng has increased by 60% during the Covid-19 pandemic period (the time at which this study was conducted), and there is a higher chance that most of these teenagers are primiparae.	MOU might deal with a higher volume of MHC users who lack knowledge of pregnancy in general. Therefore, measures must be in place to target these MHC users to improve their BPCR. Multiparous women are among the high-risk women, and they should be adequately assessed and motivated to attend ANC clinics. However, this will be a challenge if they are not coming for ANC when pregnant. So, all MHC users should be encouraged to participate in family planning to reduce unplanned pregnancies. Women who plan for their pregnancies are likely to attend ANC.
• **Health service delivery**	To ensure that MHC users are met with prompt quality care, thereby overcoming the delay associated with the provision	Poor maintenance, shortage of staff and financial constraints may burden the MOUs to

	of quality care at the health facility, the availability of medical supplies should be ensured, and the health systems, policies and structures should be updated as they play a major role in BPCR. The study MOU is accessible as it is closer to the Central Business District (CBD), and there are many transportation mediums (taxis) passing nearby. Male participation is not prohibited in the MOU, but their roles are not defined, and seats are reserved for women as they would have to stand if the clinic is full. Women are not encouraged to bring their partners; however, the current Covid-19 pandemic did not allow male participation.	ensure sufficient staffing and make available the resources and equipment to overcome the care delays associated with care provision.
PHASE 2, A: NGT-INTERVIEW WITH MHC users		
Interventions needed by MHC users		
Counselling	Women stated that they could benefit from counselling as they have unplanned pregnancies most of the time. Unplanned pregnancies are commonest amongst teenagers, and in Gauteng alone, teenage pregnancies increased by 60% during the covid-19 pandemic (see Teen pregnancies in South Africa jump 60% during COVID-19 pandemic - South Africa | ReliefWeb)	Staff shortage may lead to the inability to individualize counselling. However, the use of volunteer, trained/briefed peer to peer counselling on coping and coming to terms with unplanned pregnancies, and giving practical advice -could be explored with past users.
Social Media	As noted in the scoping review, the use of technology can help increase BPCR. Mobile phone applications were an acceptable means to ease communication between health professionals and MHC users,	The challenge with mobile phones is that MHC users from disadvantaged communities may not afford a mobile phone. These communities are also among the illiterate and may not be able to

	which may contribute to a higher level of BPCR.	read messages if they were afforded mobile phones.
Partner involvement	Women expressed the need to have their partners during their pregnancies and that their partner lacked MHC knowledge and felt it did not concern them. We have learned the importance of men's involvement in MHC during the scoping review. Health facilities need to work with communities to educate men and improve their participation in MHC	(Similar constraints are stated above under scoping review; male involvement.)
Information to be provided	Lack of knowledge on pregnancy, in general, was reported by women during the interview. This gives an insight into what health facilities can focus on to meet the local community's needs. The Jhpiego BPCR manual provides a comprehensive guide on what can be done to improve knowledge of BPCR.	A need to raise BPCR among MHC users is apparent. Therefore, MOUs need to employ extra measures to tackle this need if maternal mortalities are to be reduced.
Staff attitude	Women are concerned with abuse and disrespect from health care providers. Health facilities need to cultivate client-oriented care and provide a welcoming environment to increase skilled birth attendance.	ANC attendance and delivery at an MOU may be affected by unwelcoming staff attitude, i.e., MOUs need to employ measures to ensure client-oriented care, such as conducting workshops or refresher courses with staff members. This may add to financial constraints.

5.2 ANALYSIS

The first step in the analysis phase is to establish what the learners already know and need to know after completing the learning instructions (Peterson, 2003). Therefore, the researcher

assessed the need to identify the learning outcomes. As the programme is intended for a large and diverse group of learners (MHC users), the learner analysis was conducted to establish who they are and determine the needed intervention to close the performance gaps. The latest evidence from the scoping review and the interview findings from the MHC users were used to determine what is needed to develop a functional and relevant BPCR programme for the MHC users. The constraints of these findings concerning the study settings were established (see Table 5-1) to inform the choice of functional, cost-effective interventions relevant during the design and development phases. The next step in the analysis phase is the task analysis, where the researcher establishes what should be the content of the developed programme, which is also informed by the scoping review and the NGT findings. In the final step, the researcher sets the learning outcomes to determine what must be learned.

5.2.1 Learner Analysis

The programme is intended for the inner-city Johannesburg MOU's MHC users, who are women of reproductive age and their male partners. The inner-city Johannesburg comprises various ethnicities, including foreign nationalities, as noted in Table 5-1 above. These MHC users are expected to have a wide range of sociodemographic characteristics. Therefore, in addressing their awareness of the BPCR strategy, health care providers need to assess specific MHC users' individual needs to avoid giving repetitive information and optimise individualised care. For example, MHC users who are literate are likely to be more prepared for birth than those who are illiterate, and therefore understanding such demographics can help save time and direct more attention to the MHC users who are less likely to be prepared for birth. In addition, the programme should be delivered in English as it is an international language and is presumed to cater for various ethnicities, including international migrants. However, the midwife should, whenever possible, use translation services to educate MHC users who cannot speak English. These may include internet-based services such as 'Google Translate' which to an extent can offer immediate connection with the client.

Some of the immigrants of the city of Johannesburg are from other provinces of South Africa, undocumented foreign nationalities and others are asylum seekers who are faced with many challenges, including socioeconomic challenges, amongst others. It thus becomes important that, in developing a functional and relevant programme, special consideration is taken to develop a more inclusive programme. Therefore, the programme should not add extra costs to both the MHC users and the health care providers. It should be accessible to all users, and midwives can discuss

economic empowerment strategies such as money-saving and emergency transportation schemes during the MHC users' ANC visits. The information on local transportation systems and nearest health facilities and their expected level of care should be given and made accessible to MHC users. ANC clinic attendance is very important in improving the utilisation of BPCR strategies. MHC users should therefore be encouraged to attend at least 4 ANC visits as we have learnt in the scoping review that MHC users who attended a minimum of four or more ANC visits were more prepared than those who had less attendance.

Further, the scoping review has provided many factors that may impede or facilitate participation in BPCR strategies. From these factors, we have learnt that the learners' prior knowledge of BPCR will differ based on, but not limited to, their belief systems, cultural background, and accessibility to health information. Although the study did not assess the BPCR status of the healthcare provider, regarding its readiness in the provision of care that is adequate and appropriate to reduce health provider related delays in the provision of care, it is important that healthcare providers are not only culturally competent and aware but also make the health information accessible to MHC users. BPCR information brochures, posters and multimedia & technological applications are some of the resources that can be used to provide such information as we have noted in the scoping review that these mediums effectively raised the level of BPCR among MHC users. Also, relating to the provision of care, the MHC users in the NGT interview were concerned about the care that was disrespectful and undermined their rights. It thus becomes imperative that health care providers strive to offer client-focused care as poor care delivery and unwelcoming staff attitude may affect the ANC clinic attendance by MHC users, thereby contributing to their low BPCR statuses. Health care providers should ensure the availability of supplies to reduce delays in providing care and ensure that there is no mismatch between the MHC users' expectation of rendered care and the health provider's intended care. Therefore, the MHC users should be met with expected care at various levels of health care.

Also important to consider is the learners' interest to learn, as it will aid the development of an effective programme for improving BPCR. The parity of women was shown to play a significant role in the learning interest of MHC users. The scoping review shows that primigravidae and women who previously had complicated pregnancies are noted to be among women interested in learning and participating in BPCR compared to multiparous women who had previous normal deliveries. The primiparae women and their lack of knowledge, higher educational status, and excitement about birth make them more prepared for birth and its complications. This group of

MHC users (primiparae) can benefit from various platforms such as mobile phone messaging, pamphlets and internet resources that provide key BPCR and danger signs messages due to their high educational status and interest to learn. The high exposure to some of these platforms, together with the literacy of MHC users, has been shown to improve the BPCR status and can also effectively alleviate the MOU's shortage of human resources.

Participants from the NGT interview expressed the need to be informed and counselled during their pregnancies, as most of the time, they find themselves pregnant without prior planning. We have learnt in the scoping review that education and counselling of MHC users on dangers signs in pregnancy can significantly improve their BPCR status. Focused and structured ANC counselling and the discussions of BPCR components and their targeted benefits were also shown to raise the MHC users' BPCR status effectively. BPCR focused counselling and education are some ways that can be adapted to develop a functional and relevant programme for an urban area. The participants also expressed the need to have their partners during the clinic visit, who reportedly lack knowledge of pregnancy in general and are difficult to deal with when it comes to reproductive issues.

Further, male partners are willing to participate in MHC, although their roles are not always defined. Means to get male partners interested and participate in MHC should be sought. For example, invitation letters can be given to pregnant women to give to their male partners, inviting them for group discussions during the ANC clinic visit. This group discussion can improve partners' communication and raise awareness and knowledge of danger signs among the partners.

5.2.2 Task Analysis

In this step, the researcher established the contents of the programme. Bearing in mind that the programme should cater for the participants in an urban setting and be functional and relevant, the researcher considered the findings from the scoping review and the NGT interview with MHC users.

Education of pregnancy-related danger signs to MHC users effectively raises awareness and utilises the BPCR strategy. Women who are knowledgeable of the danger signs can act timely to seek and reach obstetric health care, which is relevant and adequate to stabilize them. Therefore, MHC users can directly go to the hospital instead of a clinic based on the knowledge of danger signs and the awareness of the level of care provided in various health facilities.

Accessibility of the health facility is another key component that MHC users should be made aware of. This will ensure that they will timely reach care during emergencies and at a relevant health

facility. Different levels of care should be discussed with MHC users so that women who are experiencing danger signs will know where to go during emergencies. Health facilities in Johannesburg are accessible, but as shown in Table 5-1 above, the city comprises a diverse population, including undocumented foreign immigrants. Some of these immigrants may not know where to go and how to reach health facilities when they fall pregnant. Therefore, we should provide and make accessible the information on transportation systems in place and local various health facilities and their provided level of health care.

Education of MHC users on Key messages of the BPCR strategy can be included in the BPCR programme. These messages include raising awareness of saving money for emergencies during pregnancy and childbirth, the identification of a birth companion, attendance of the ANC clinic, knowledge of community resources, planning birth with a skilled attendant, identification of transport to a place of childbirth, and arrangement for a caretaker of other children while visiting the health facility. These are important messages that MHC users can learn to improve their BPCR statuses in an urban setting. The scoping review revealed that MHC users who were unaware of these key messages were less prepared for birth and its probable complications.

Couple counselling and means to improve male partners' participation in MHC should be sought. The findings from both the scoping review and the NGT interview with MHC users show that women struggle to get their partners involved as they feel pregnancy and childbirth are women's domains. However, we have also noted that men play an important role in MHC, and the outcome of pregnancy can be improved as the birth preparedness, and complication status of women improves when men are involved.

The empowerment of MHC users on their rights and responsibilities is another key component that the programme should have, as people who are empowered and are knowledgeable of their rights and responsibilities are less likely to be treated unfairly and disrespected. We have seen that the disrespect of women during pregnancy has a snowball effect as it contributes to the poor utilisation of health facilities, which leads to lower levels of BPCR as the MHC users would have missed the key BPCR information offered during ANC clinic visits.

Economic empowerment strategies should be discussed during clinic visits, and MHC users are empowered to plan for their pregnancy such that they have a sound financial state that enables them to be ready and act promptly to seek and reach care during emergencies in pregnancy. Women can brainstorm and discuss among themselves the most effective ways to raise and save money for

pregnancy and birth. Midwives can discuss money-saving schemes for emergency transportation with MHC users during the ANC clinic visits and encourage male partners to continue with the financial support as we have noted that this is one of the roles male partners identify themselves with.

5.2.3 Learning Outcomes

The following learning outcomes are derived from the above analysis of needs, the learner and the task.

- MHC users will demonstrate knowledge of danger signs in pregnancy, labour and postnatal stage throughout the childbearing period.
- MHC users will demonstrate knowledge of their rights and responsibilities and request 'appropriate quality care' during their interaction with health care providers.
- MHC users will register for ANC clinic once they fall pregnant and continue attending all subsequent ANC visits at their local clinics.
- MHC users will demonstrate knowledge of the place of childbirth (i.e., all levels of obstetric health care providers) that they can use during normal pregnancy and when potential problems occur.
- Male partners will participate in MHC and be part of decision making, regarding the pregnancy outcomes, by accompanying their female partners when seeking the MHC.

The researcher considered the following recommendations to ensure that the above learning outcomes are met, and the third delay, which is associated with the health care provider, the facility and the policymaker, is addressed.

- Health care providers should hold at least one midwife-led, ANC group counselling session by the time the women go into normal labour with MHC users (pregnant women and their male partners and or family a member)
- Health care providers (midwives) will always follow the outlined standards of practice in their facilities and provide appropriate, respectful, and adequate care.
- Health facilities should always provide sufficient staffing and adequate resources and equipment to ensure timely care during emergencies.

5.3 DESIGN PHASE

The focus of this phase was to design the project using the information collected from the analysis phase and with principles of instructional design (Drljača *et al.*, 2017). Therefore, the researcher identified the most effective way and the mediums through which BPCR's key messages and the knowledge of danger signs can be effectively conveyed to MHC users based on the analysis phase. This stage involves active planning, setting out the objectives and how they will be met, and finding the instructional strategy that will be used to meet the learning outcomes (Peterson, 2003). In the first step, the researcher used the learning outcome identified in the previous phase to define their intended impact on the MHC users and how they will be achieved with the developed programme. The next step was to find the most functional and relevant medium or platform that would be used to provide the learning. Finally, the instructional strategy was determined, detailing how each chosen platform will be developed.

5.3.1 Design assessment

It may be seen as counterintuitive to design the assessment before the actual content, but it is helpful to know how the knowledge acquirement of the MHC users will be measured when creating the instructional strategy. For this study, assessing the learning outcomes of each MHC user may not be feasible, but based on the intended impact (see Table 5-2), the behavioural change of MHC users concerning their BPCR status is expected. Peterson (2003) emphasises that this step is the most important in the design phase as it lays the foundation for determining how the objectives will be assessed.

Table 5-2: Learning Outcomes, Intended Outcomes and Programme Activities.

NO.	LEARNING OUTCOMES	INTENDED IMPACT	PROGRAMME ACTIVITIES
1	MHC users will demonstrate knowledge of danger signs in pregnancy, labour and postnatal stage throughout the childbearing period	If MHC users know danger signs, they will act promptly to seek MHC and reach the care facility. They will save money to use during the emergence of potential problems in pregnancy	The programme mediums (ANC counselling, media and technology and men's involvement) should provide information on danger signs, ANC visit with a skilled provider, identifying a mode of transport to a place of childbirth, saving money for childbirth, and knowledge of community resources.
2	MHC users will demonstrate Knowledge of their rights and responsibilities and be able to request 'appropriate quality care' during their	MHC users empowered with their rights will ensure that the health care providers deliver the promised care, which is adequate, appropriate and respectful.	ANC group sessions to empower MHC users with Knowledge of their rights and responsibilities. Midwives to have open discussions with MHC users on ways to best render respectful care and establish an atmosphere where there is mutual

	interaction with healthcare providers		responsibility and understanding between the two parties.
3	MHC users will register for ANC clinic once they fall pregnant and continue attending all subsequent ANC visits at their local clinics.	ANC clinic attendance provides the basis for early anticipation of potential problems in pregnancy with the possibility of influencing positive pregnancy outcomes.	The programme medium, such as pamphlets, can be given to MHC users during the ANC visits, and the assessment of individuals' care needs can be done to provide counselling and information specific to them as the MHC users' prior knowledge may differ. These pamphlets can be made interactive to allow for assessment throughout MHC services
4	MHC users will demonstrate knowledge of the place of childbirth (i.e., all levels of obstetric health care provision) that they can receive during normal pregnancy and when potential problems occur.	MHC users who encounter obstetric emergencies will not waste more time going to a lower level of care such as clinics. They with go directly to the higher-level facility where they can be met by relevant and adequate care	Various mediums of the programme should provide information on where women can seek care during normal pregnancy and where they can go when experiencing any danger signs of pregnancy complications.
5	Male partners will participate in MHC and be part of decision making, regarding the pregnancy outcomes, by accompanying their female partners when seeking the MHC.	The male partners' role in MHC is beneficial and influences the BPCR status of women.	The programme should allow for a group activity that provides counselling for pregnant women and their partners. Invitation letters to male partners can be issued. Male partners' roles can be discussed during group sessions

5.3.2 Programme format

Based on the diversity of the targeted learners, in this case, the MHC users, the researcher intended this programme to be delivered in a blended form. This allowed for optimum impact and interaction and made the programme functional and relevant to the local settings. Similar findings from both the scoping review and the NGT interview were the bases through which the use of pamphlets, posters, an internet-based educative video and the ANC group counselling sessions with women and their partners were chosen. Using all these mediums also ensured that the important findings of the scoping review and the NGT interview were well incorporated. MHC users will be given these pamphlets to read independently, and midwives will continually assess their learning needs during the ANC counselling sessions and optimise their knowledge based on what each care user has learned. During the usual initial ANC assessment, the midwives will evaluate the learning needs of everyone. The posters will be useful during group counselling sessions, and MHC users

can self-teach by reading from these posters. It also provides an internet video link for more content on BPCR on YouTube and Facebook applications.

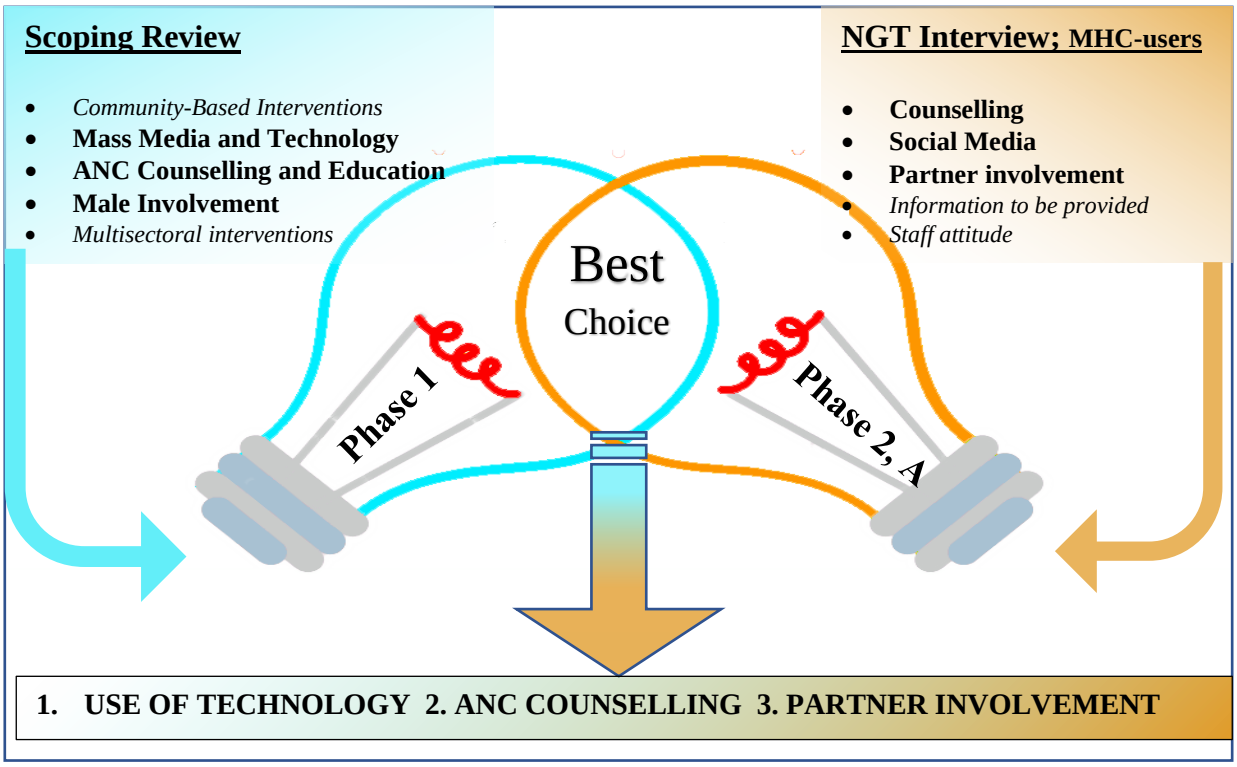

Figure 5-1:Selection of most suited interventions

The three interventions considered as best (see Figure 5-1) allowed for different mediums through which the programme can be delivered to the MHC users. The **Mass media and technology** (television, radio stations, newspapers, and mobile phones) and the constraints described in Table 5-1 informed the criteria for choosing a medium that would not only be impactful but be cost-effective, therefore, adding to the objective of developing a functional programme. The choice of the used medium (pamphlets, posters, video, and ANC group counselling sessions) was based on the following assessment.

- The cost associated with acquiring and maintaining television sets and or subscribing to a radio station to deliver BPCR messages may lead to a programme that is not functional due to financial constraints. The scoping review also noted that listening to frequent BPCR messages on the radio only had an insignificant outcome on the level of BPCR.
- The South African National Department of Health already provides a well-established mobile phone-based application (MomConnect) with over 1.7 million subscribers (Peter *et*

al., 2018). Although it is not specifically dealing with BPCR, introducing more applications may be cumbersome, resulting in low usage. However, integration of structured and focused BPCR may be possible through liaising with the MomConnect programme coordinators. Currently, the MomConnect application is based on Unstructured Supplementary Service Data (USSD) and Short Message Service (SMS) (Peter *et al.*, 2018). Once multimedia messaging applications, such as WhatsApp, are made available on MomConnect, the developed BPCR video can be conveniently shared with MHC users on their mobile phones using the same platform.

- A paper-based medium can be more practicable as a soft copy can be stored, printed and transported easily within the health facility. Although there will be illiterate MHC users, the researcher considered a higher literacy rate (98.7%) of adults residing in Johannesburg. See (City has most literate adults in country (iol.co.za) Accessed: 13 October 2021. In addition, reading newspapers was one of the most significant ways of increasing the level of BPCR, as we noted in the scoping review, and by using pamphlets and posters, we can achieve similar outcomes.
- ANC group sessions counselling provides another alternative through which key messages on BPCR can be conveyed. Although Johannesburg has a lower (about 5%) ANC attendance, as noted in Table 5-1, compared to national levels, MHC users can still be targeted to come with their male partners for more interaction, knowledge sharing and education. Male partners can be invited using letters or telephone to encourage and raise their participation as we have learnt their usefulness in maternal outcomes. This group session can be led by a midwife, or a health worker trained on the BPCR strategy.

5.3.3 Instructional strategy

Focused and Structured ANC counselling, the partner's involvement and technological applications were chosen as more suitable interventions from which the teaching methods were derived. These interventions also served as the basis for the development of the programme. The following were considered.

- Facebook and YouTube video was sought to play visual stories of key messages on BPCR, developed to raise awareness and practice.
- The use of pamphlets, brochures and posters is another way to get MHC users informed on key BPCR messages.

- The use of focused and structured BPCR group counselling sessions can be arranged during the ANC visits, including women and their partners.

Table 5-3: Blueprint for the programme delivery formats

PROGRAMME DELIVERY MEDIUM	DESIGN STRATEGY AND RELEVANCE
Pamphlets	**Pre-instructional Actions**
	• The pamphlet should clearly state the importance of being prepared for birth and its probable complications. This is intended to motivate the learners (MHC users) to learn about the activities that would help them be more prepared. They will internalise what they will learn if they can see the value of the programme (Kurt, 2016).
	Content presentation
	• The content should be concise, without unnecessary details, and based on the learning objectives to keep the users interested in reading. • The use of illustration, where possible, can help MHC users to internalise what they will be learning • The pamphlet should be portable to reduce extra luggage (Tri-fold brochure of size A4), so it can be attached to Maternity Case Records for MHC users to carry when visiting the clinic.
	Learner participation and Assessment
	• The pamphlet should allow for midwives and MHC users to interact. Therefore, this will be a self-learning document, which MHC users can refer to the midwife for further information or clarity on what they have learned. • Midwives should be able to assess the knowledge acquirement of the MHC users and direct them to more resources where necessary. • The pamphlet should have a section to assess the knowledge needed to individualise care. The midwife will fill this section when handing the pamphlet to the MHC users during the first contact.
Posters	**Pre-instructional Actions**
	• The poster should be eye-catching to draw the intended audience • It should be readable with a heading that is relevant to the learning outcome, and it should not be eye-straining • It should provide useable links where users can get more information
	Content presentation
	• The content should be concise, without unnecessary details, and based on the learning objectives to keep the users interested in reading. • The use of illustration, where possible, can help MHC users to internalise what they will be learning • The poster should be big enough to be read from +/- 3meters and from a sitting position where possible. (**Size**: A1 or A0, **fonts**: title 85pt, subtitle 56pt, headings 36pt, body 24pt, and captions 18pt)
	Learner participation and Assessment
	• During group sessions, the poster can be used to educate MHC users • The midwife leading the group session can further determine the learning needs of the MHC users.
Video	**Pre-instructional Actions**
	• The purpose of the video should be stated at the beginning to get the viewers interested in learning more • Explanation of the contents can be dramatized for more impact

	Content presentation
	• The content should be concise, without unnecessary details, and based on the learning objectives to keep the users interested in watching. • The use of illustration, where possible, can help MHC users to internalise what they will be learning • The video should not last more than 5 minutes and should motivate birth preparedness and complication readiness
	Learner participation and Assessment
	• Self-learning
ANC group session counselling	**Pre-instructional Actions**
	• Invitation letters to male partners should be well sought and be given to women on their first ANC visit to give their partners • Setting arrangement and number of group participants be determined • Sessions can be made flexible depending on staff and the number of clients. Ideally, the session should not last more than 30 minutes • Various topics on BPCR should be planned, depending on group needs • Measures to ensure participation by all group members should be sought
	Content presentation
	• BPCR's key components, i.e., knowledge of key danger signs, ANC visit with a skilled provider, identifying a mode of transport to a place of childbirth, planning to give birth with a skilled provider, saving money for childbirth, and knowledge of community resources. • Discussions on male partners' involvement and the benefits thereof. • Education and reinforcement of the patients' rights as per hospital policy and the Batho Pele Principles
	Learner participation and Assessment
	• The group sessions should be interactive. Midwives should be able to assess the knowledge acquirement of the MHC users and direct them to more resources where necessary.

5.4 DEVELOPMENT PHASE

The Development stage used the defined parameters and the collected data in the first two stages to create a programme that would convey the learners' content. The programme mediums were drafted and presented initially to the two academic experts (supervisors), and the final draft was later presented to MHC professionals, whose input helped align the programme to the local settings. These included:

1. A pamphlet will be issued to MHC users during their initial ANC visit. This will be a self-learning brochure that allows for interaction with midwives and assessing MHC users' care needs. (See Appendix J)
2. A poster that can be used during ANC group counselling of MHC users can be stuck to the wall where MHC users can read from it and learn about BPCR. (Appendix K)

3. A video showing a dramatized story of BPCR is accessible on Facebook (https://www.facebook.com/100012161465277/videos/347128534244571/), and on YouTube (https://youtu.be/eMOi8py8v3s).
4. The outline for conducting group sessions with MHC users (pregnant women and their male partners and or a family member) and the recommendations for the health care providers (midwives) to ensure that the programme is successful, thereby addressing the delays from both the care provider and the receiver's sides. (Appendix L)

5.5 NOMINAL GROUP TECHNIQUE- MHC professionals

In seeking consensus on whether the programme would be functional and relevant to the local settings, the researcher presented the developed programme to a panel of health professionals. As stated in the methodology chapter, the programme was to have been presented to expert midwives who have at least five years of experience working in the MHC field. This was, however, not achieved due to the Covid-19 pandemic, which left the MOU with a skeleton staff. More than eleven (11) staff members, including expert midwives, were on sick leave after testing positive for the Omicron Covid-19 virus variant during the time this interview was conducted. Therefore, of the five health professionals included, there were four midwives, of which two had more than five years of work experience, and two had been in service for two years. The fifth health professional was an obstetrician with over five years of work experience in maternal health care.

Nonetheless, the researcher was able to generate useful feedback from this group of MHC professionals guided by the consensus-seeking method of the NGT. The findings are discussed below.

5.5.1 Confidence in the functionality of the programme and its shortcomings

- **Partner involvement**

Male participation was a more welcome intervention, as most participants acknowledged the importance of male partners in MHC. Participant A mentioned that; *"the need for partner involvement is important for support and couple management in case the mother tested HIV positive."* Another participant stated that male partners are often interested in MHC, although the health facilities are not male partner friendly. She further said that male partners lack knowledge, contributing to their low participation in MHC. *"Other partners choose to be absent during*

pregnancy due to lack of knowledge." (Participant E). Adequate information on BPCR will ensure the programme's functionality to help the expectant couple be prepared, consequently reducing their misunderstandings. *"It will be functional as both the partners will understand things on birth preparedness so that they must not blame each other"* (Participant C).

On the other hand, some participants were concerned about the shortage of staff and the physical structure of the MOU, which has limited space to accommodate male partners. *"However, the challenges come with the space. yes, you can say we have space but there are other facilities that only have one room for antenatal and you find that it is only one midwife who is doing aids, then when will all these women going to be attended with their partners?"* (Participant A). *"So, with our facilities initially they are not structured in a manner that we can allow partners to come with their women during consultation"* (Participant E). However, another participant differed with participant A on the shortage of staff saying that the usual consultation includes counselling which she does with all MHC users she consults during the ANC visit, but she agreed with both participants A and E that bringing male partners could prove difficult due to physical space in the MOU. *"I think it will work because even patients that enter my consultation room, I give health education. so, I think if the women are coming with their partners and we give health education at once, so they won't be a shortage of staff then because I will be doing what I usually do every day. and all that, because maybe in the morning there will be problem or space where partners can sit*." (Participant D). In response to this, participant A stated that the interactive nature of the health education may be prolonged as there will be more clients to deal with. "*Remember it is an interactive health education* ***akere*** (right?), *you give them health education, they are going to ask questions there are things that they are going to verify, remember if the partner test HIV positive you have to go now and do counselling and testing, you understand?"* One participant expressed little confidence in male participation. She stated, "Many *women would like the involvement of their partners in pregnancy, but partners are too busy…are scared of commitments, they will not come."* (Participant D). She also stated that there is a higher teenage pregnancy rate, of which most will not have male partners. *"Teenage pregnancy is high, and babies are born fatherless, so no partner will support the mother."*

- **ANC counselling**

Talking about the ANC, participant C continued stating that ANC group counselling can benefit both the pregnant woman and her partner. *"It will ensure that the couple is emotionally prepared,*

and the mother feels supported by the partner". One other participant had confidence in single mothers attending ANC group counselling alone and that they can have positive birth outcomes. *"Even single mothers can stick to the ANC classes and make it to delivery without complications. In case of complications, they will know what to do"* (Participant D). Participant E acknowledged the importance of ANC group counselling. However, she indicated that it would be helpful if preconception counselling were offered as *"there are little or no birth preparedness offering platforms"* during that period. Participant D also suggested that preconception counselling is important, and BPCR counselling should start at family planning clinics. *I think we should start at family day clinics. They should get health education because you know they go there to get contraceptives, but, in the future, they may want to have a baby. Maybe the health education should start there on planning of the baby, and then they involve their partners before conception…"* (Participant D). Participants did not express much of the negative aspects of having ANC group counselling except that the physical structure of the MOU does not allow for both male partners and pregnant women to be seen together. They also suggested that ANC group counselling should be done before conception so that couples are already aware of the BPCR strategy when they fall pregnant.

- **The use of technology**

The inclusion of a video that shows a story about birth preparedness and informs MHC users on what they can do to be birth prepared was found to be a good idea that can help women and their partners to be interested in learning about BPCR without adding more job to the midwives who are short-staffed and overburdened with the workload. *"You know, to be honest, with the number of patients we see in the public, it can only work very well with private midwives because there will be time to be with these patients and their partners but with the public shortage of staff, … hence I am saying in an ideal world it is good and it can work. I am happy you even developed a video that women can go through with their partners I think that is the tool that can work"* (Participant A). Another participant said the video could be played for women in the MOU while awaiting consultation. *"It will work in the sense that, let's say you are uploading the video while they are waiting here …you can put those videos so if we are having such screen, while they are waiting, they're getting educated"* (Participant E).

However, on the negative side, participant B was concerned with the sustainability of the pamphlets, which will require frequent printing and restocking. She mentioned that the MOU's

printing equipment is often poorly maintained, affecting the availability of these pamphlets. *"…but pamphlets will have to be printed from outside and topped up all the time because often in the facility photocopying machine is not working and this definitely not some colour,"* (Participant B). She also stated that the dangers signs on the developed poster about the baby should include signs that can be detected early, such as poor feeding by the baby, excessive vomiting and the baby appearing jaundiced. Additionally, participant A advised that the poster should have the National Department of Health logo to be plugged on the MOU walls.

- **The participant's general impression of the programme.**

Participant B had the general impression that the programme would be functional as it provides good coverage and is likely to reach a higher percentage of pregnant women. She stated that District G has a big problem relating to lack of birth preparedness among pregnant women, which contributes to undesirable birth outcomes. *"Not preparing for transport when going to labour or encountering problems is a huge problem…leading to a lot of stillbirths."* She stated that women wait many hours for an ambulance, and in a period of 4 months (July - October 2021), one MOU "*had 13 stillbirths and nine births before arrival (BBA) at the hospital due to lack of planning*" for transport. She said that the programme provides important information on what should be taught during the antenatal period. "*I think components of that can work. I think people can be more aware of messages they must give at Antenatal; it will help if we have partners, it will help if we have pamphlets…"* (Participant B).

Similarly, participants A and D also expressed confidence in the programme's functionality. *"…it is a good programme, because it wants to involve men in the management of pregnancy, most women feel that their partners do not know anything about pregnancy. Therefore, that will be an opportunity for partners to learn about pregnancy and their role during pregnancy and delivery."* (Participant A). *"Okay, this is a nice programme* ***neh****,* (right) *especially if a patients book early…".* (Participant D).

- **Issues that were considered during the development of the programme**

During the development of the programme, the researcher considered the physical structure of the MOU and the shortage of staff, which is a problem that could not be easily overcome. As a result, the researcher recommended at least one midwife-led group counselling session with women and their male partners during pregnancy. Further, the use of a BPCR educative video and posters was

to help alleviate the workload on the MHC staff members. Pamphlets were also designed to self-learn so that the MHC users only need to consult with midwives to seek further clarification or elaborations on concepts they did not understand. All these media were designed to have minimum impact on the workload of midwives.

5.5.2 Amendment of the programme based on the input from NGT-health professionals

Table 5-4: Amendment of the programme using expert views

PLATFORM	CONCERNS	AMENDMENT
Pamphlets	Reprinting and stocking of pamphlets. The additional workload on staff members	Based on some of the suggestions raised by the participants that having pamphlets provides educative information that can raise the awareness of BPCR amongst the MHC users and that it was designed to have minimum impact on the care provider's workload, it is safe to assume that the benefits of having pamphlets outweigh the administrative issue of reprinting and maintenance of the printing equipment in the MOU. However, sponsorship can be sought to ensure that pamphlets are always available. Additionally, once the MomConnet application is available as a multimedia platform, i.e., supporting applications like WhatsApp and Facebook, it will allow for these pamphlets to be shared electronically, overcoming the MOU's reprinting and maintenance issues.
Video	Video can be played in waiting rooms	If MOU acquires television sets, video can be played there. The video can also be sent directly to MHC users' phones in the future if MomConnect becomes available on WhatsApp.
Poster	Danger signs relating to the baby need to be recognized early. The National Department of Health and the Province Health logos should be included	The danger signs were corrected to include signs that can be detected early enough. These included: baby not drinking well and vomiting a lot, baby not as active and moving as before, the baby being jaundiced. The National Department of Health and the Province Health logos were included
ANC Group counselling	Shortage of staff Lack of physical space to include man	As males' involvement may be difficult due to raised concerns, the researcher recommended at least one midwife-led ANC group counselling

	Lack of preconception counselling	conducted during pregnancy with both the women and their male partners. A further recommendation to extend this education and counselling was made to be included at family planning clinics to address women and their partners before conception.

5.6 CONCLUSION

This chapter focused on developing a programme that will improve the BPCR of MHC users. It combines the findings from the scoping review in chapter 3 and data collected from MHC users in chapter 4 to develop a programme using the ADDIE model. The developed programme was reviewed by MHC professionals and finalized. The following chapter gives a summary of the study, its limitations, and its conclusion.

6 : GENERAL CONCLUSION

6.1 INTRODUCTION

In this final chapter, the researcher summarises the study and briefly discusses the limitations of the scoping review, the NGT interviews and the developed programme. The study recommendation and its implications for the nursing practice and research are provided, followed by the conclusion.

6.2 SUMMARY

This study utilized a scoping review to explore existing data on what could constitute a locally relevant and functional BPCR programme for an urban area. In contextualizing the programme to the local setting, the researcher considered studies from sub-Saharan Africa and developing countries worldwide. Further, the researcher used a nominal group technique interview to get input from the MHC users. The data collected from both the scoping review and the NGT interview was used to develop a programme to improve compliance with the BPCR by MHC users. This was made possible by employing the ADDIE model, which is an instructional strategy used to design teaching programmes or aid learning. Educational experts reviewed the developed programme to see if it would yield the intended outcomes. The programme was also presented to MHC professionals experienced in the field to evaluate whether it would be functional and relevant to the local setting.

6.3 STRENGTHS AND LIMITATIONS

6.3.1 The Scoping Review

This scoping review was an exploratory study and included 21 studies from which the results and conclusions were drawn. While the researcher made conclusions from these studies, many studies were excluded for various reasons, as stated in the PRISMA diagram (Figure 3-1). The researcher selected recent studies (2014-2021) that were more suitable for a developing country and, therefore, excluded studies conducted in developed countries, which implies that the findings may not be applicable in those regions but provided more relevant information which can be used locally. There is a potential omission of important findings from studies written in other languages as this review only included studies written in the English language.

In addition, most included studies were descriptive studies that are best suited for forming a hypothesis. All these studies reported positive outcomes in their intervention groups, which could be due to researcher bias or the possibility of the Hawthorn effect. Although these study findings

provided important data, their findings cannot be as generalizable as those of analytic studies, such as randomized control trials, which are more reliable, have no bias and include a larger sample size (Alnahdi, 2015). Further, using the scoping review instead of a systematic review implied that the quality of the selected studies would not be assured. However, this allowed for broader inclusion of BPCR studies that are not peer-reviewed. The broader scope of included studies warranted a more comprehensive range of interventions that can be used in a programme for improving the level of BPCR.

6.3.2 The Nominal Group Technique Interview

An NGT was chosen for its effectiveness in generating creative thinking, as a collective individual effort is more productive than a group effort (Bouchard and Hare, 1970). Due to Covid-19 restrictions, a maximum of 5 participants were permitted to take part in any nominal group to allow for social distancing and reduce the likelihood of spreading the virus. Although this is the minimum number of participants suggested for an NGT interview (Potter, Gordon and Hamer, 2004), the results from a larger group could have been more informative. However, this gave the researcher enough time to interact with the participants and probe in-depth while gathering information. The nominal group interview with MHC users was to include male partners of pregnant women, but that was not achieved as male participants were not allowed into the obstetric unit. This implies that important input from male partners could not be included. Nonetheless, the knowledge gathered from the scoping review informs us that incorporating male partners in MHC is beneficial and can help with the utilization of the BPCR strategy.

6.3.3 The Developed programme

The developed programme was strengthened through the incorporation and corroboration of multiple sources. First, the researcher conducted an intensive literature review using the scoping review then used a nominal group technique to get the input of MHC users. Third, the findings from these two study phases were triangulated through the ADDIE model to develop the programme. The ADDIE model is a well-known and widely used instructional strategy to design and develop educational training programmes. Finally, the programme was reviewed by two academic experts (supervisors) and later presented to a panel of MHC professionals in the practice field to validate the programme and critique whether it would be functional in an urban area. However, the intention was to review the programme by at least five expert midwives (those with five or more years of work experience), but that was not achieved as so many staff members were on sick leave due to Covid-19 infection at the time, the programme was presented. It was only

possible to include four midwives, of whom two met the defined expert standard, and two did not. The fifth participant was an obstetrician who was included to meet the minimum number required to collect effective data in an NGT interview and had a similar exposure and experience the expert midwives had with MHC users. The final steps of the ADDIE model (Implementation and Evaluation) were not included in the study as the plan is to implement them as part of post-doctoral studies.

6.4 RECOMMENDATIONS

6.4.1 Nursing Research

This study provided a steppingstone for further exploration of strategies to improve MHC users' birth preparedness and complication readiness. More research is needed to investigate the BPCR status of MHC users as well as that of the health care providers in South Africa, to develop more interventions that are relevant to an urban area of a developing country and effectively ensure that there is no mismatch between the expected and the provided or intended care. This will ensure that the health care providers and MHC users are prepared for childbirth, overcoming the delays associated with maternal deaths. Furthermore, future research should focus on testing the developed programme's effectiveness and feasibility to ensure that more appropriate and effective ways of improving BPCR among MHC users are sought.

6.4.2 Nursing Practice

Evidence shows that the delays in seeking obstetric care, reaching a health facility, and providing appropriate and adequate care contribute to MM. The improvement of the BPCR strategy needs to be tackled from both the provider and user’s perspectives. The third delay can be overcome if health care providers, health facilities, and policymakers can work together to ensure that MHC users get the intended care. Further, nurses must be welcoming and have respect for patients’ rights. They are encouraged to provide client-oriented care which is not disrespectful and abusive. Although the physical structures of most MOUs in Johannesburg are not male partner-friendly, a more inclusive measure should be sought to raise and promote BPCR amongst men as studies show that their involvement is more beneficial and influence positive birth outcomes.

6.4.3 Nursing Education

Raising awareness of BPCR among MHC users is important as studies have shown that positive birth outcomes are associated with women and their partners’ knowledge of BPCR. Thus, it becomes crucial that nursing education integrates the principles of BPCR into the existing curricula

by using problem-solving exercises and case studies, ensuring that nursing and midwifery graduates are competent and would deliver adequate BPCR information to MHC users. If more women and their partners were aware of this strategy, the delays in seeking and reaching care would be overcome, and maternal mortalities significantly reduced in the long run. Additionally, the health professional training on BPCR strategy would contribute to the mitigation of the third delay associated with care provision.

6.5 CONCLUSION

The research question for this study was, “What would constitute a functional and locally relevant programme to guide and improve BPCR of MHC users and their partners, in a multi-cultural urban area of South Africa?

This study has shown that the elements that should be included in a programme that would guide and improve BPCR are men's involvement in MHC, the utilization of media and technology, and health education and counselling on components of BPCR during the ANC visits. However, there are several constraints in doing this, including poor MOU infrastructures- which initially were explicitly designed for women as the name implies, MHC users’ educational status, socioeconomic and cultural factors, amongst others, that hinder the participation of MHC users in BPCR and adequate provision of services by health care providers. The collaboration of health sectors and various other governmental and non-governmental sectors, including the community, must be strengthened to improve the utilization of the BPCR strategy. In moving forward, healthcare professionals should find more ways to raise finances that will be used for the sustainability of the developed programme, such as liaising the MOUs with various other organizations. Further studies should be conducted to test if the programme effectively raised awareness of the BPCR strategy, and more feasible and effective measures be sought to ensure optimal knowledge of this strategy amongst MHC users.

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Appendix A Application Letter Maternal Obstetric Unit.

University of Witwatersrand
Faculty of Health Science
Department of Nursing Education
27 St Andrews Road
Parktown, 2193
Johannesburg

28-April-2020

Maternal Obstetric Unit
Corner Klein & Smith Street

Johannesburg 2001

South Africa

Attention: District Manager

Dear Sir/Madam

RE: Application for permission to conduct a research study at your facility:
Ezekiel Keoreng (Witwatersrand student no. 1829991)

I hereby wish to apply for permission to conduct a research study at your hospital. My research topic is 'A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA', and your approval will allow me to complete the requirements of my study programme, MSc degree by dissertation in the Department of Nursing Education, which I am registered for at Witwatersrand University.

Besides conducting a scoping review, my study intends to develop, in a local context, a programme that will function and improve birth preparedness and complication readiness through consultation with experts such as midwives as well as MHC users. I presume that the programme will make a creditable contribution towards improving SBA and, most importantly, the reduction of maternal and neonatal mortalities.

This research study will be conducted in two sessions over two months. The first session will be scheduled to last for at least two hours in the first month (March 2021) with MHC users; therefore, expectant women and men who accompany them. The last session will include maternal care experts, particularly midwives and will also be conducted in two hours in June 2021. A discussion using the Nominal Group Technique will be conducted to collect data from prospective participants after permission has been sought. Patients' rights will be upheld according to the Bill of Rights Charter and in line with the hospital's protocols, policies, and research ethics.

Kindly find the enclosed copy of my research proposal and a supporting letter from my supervisor. Your approval will be highly appreciated and if my request is successful, kindly respond with a signed letter that acknowledges and permits me to continue with the study.

Yours sincerely

Ezekiel Keoreng

Cell; +27633353646

Email; 1829991@wits.ac.za

Appendix B Application Letter to the Department of Health, Gauteng

University of Witwatersrand
Faculty of Health Science
Department of Nursing Education
7 York Road
Parktown, 2193
Johannesburg

28-April-2020

Gauteng Department of Health
45 Commissioner St,
Johannesburg, 2000
South Africa

Dear Sir/Madam

RE: Application for permission to conduct a research study at XX Maternal Obstetric Unit

My name is Ezekiel Keoreng, a student at Witwatersrand University registered for an MSc degree by dissertation in the Department of Nursing Education. I hereby wish to apply for permission to research at the above-mentioned hospitals. My research topic is 'A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA.'

Besides conducting a scoping review, my study intends to develop, in a local context, a programme that will function and improve birth preparedness and complication readiness through consultation with experts such as midwives as well as MHC users. I presume that the programme will make a creditable contribution towards improving SBA and, most importantly, the reduction of maternal and neonatal mortalities.

This research study will be conducted in two sessions over two months. The first session will be scheduled to last for at least two hours in the first month (March 2021) with MHC users.

Therefore, expectant women and men who accompany them. The last session will include maternal care experts, particularly midwives and will also be conducted in two hours in June 2021. A discussion using the Nominal Group Technique will be conducted to collect data from prospective participants after permission has been sought. Patients' rights will be upheld according to the Bill of Rights Charter and in line with the hospital's protocols, policies, and research ethics.

Kindly find the enclosed copy of my research proposal and a supporting letter from my supervisor. Your approval will be highly appreciated and if my request is successful, kindly respond with a signed letter that acknowledges and permits me to continue with the study.

Yours sincerely

Ezekiel Keoreng

Cell; +27633353646

Email; (student) 1829991@wits.ac.za

(Personal) keoeze00@gmail.com

Appendix C Participation Consent Form

PARTICIPANT CONSENT SHEET

A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA

I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;

I was given time to read it, or had it read to me, in the language I best understand;

I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;

I believe I fully understand why the study is being conducted and what the intended outcomes will be;

I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time;

I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained

I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study, I am free to speak to any of these contacts.

Contact details:

Principal Researcher

Ezekiel Keoreng, Contact no. +27633353646 or by e-mail at 1829991@wits.ac.za

Supervisors

Mrs Nomonde Makhudu, Contact no. 0837254391 or by e-mail at Nomonde.Makhudu@wits.ac.za

Dr Sue Armstrong, e-mail at Sue.Armstrong@wits.ac.za

Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand

Professor CB Penny, telephone no. 011 717 2301 or by e-mail at Clement.Penny@wits.ac.za

Committee Secretariat

Ms. Z Ndlovu or Mr Rhulani Mkansi, 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

Therefore, I AGREE/DISAGREE to participate in this research [delete as appropriate]

Participant's Full Names Signature Date

Witnessed by Signature Date

Ezekiel Keoreng 13/09/2020

Principal Researcher Signature Date

Appendix D Audio recording consent

CONSENT FORM FOR AUDIO RECORDING OF STUDY PARTICIPATION

A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA

I hereby consent to audio recording of the interview[1], or focus group discussion[1], or classroom interaction[1]
I understand that:
The recording will be stored in a secure location (a locked cupboard or password-protected computer) with restricted access to the researcher and the research supervisor.
The recording will be transcribed and any information that could identify me will be removed,
The recordings will be erased within either (a) two (2) years of the publication of the research findings, or (b) six (6) years if no publications arise from this research.
Anyone wishing to access this information in the future will first have to obtain the approval of the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg
Direct quotes from my interview, without any information that could identify me, may be cited in the research report or other write-ups of research.

Name of Participant: _____

Date: _____

Place: _____

Signature or mark _____

Witnessed by:

Name of Witness: _____

Signature: _____

Date: _____

[1] Delete as appropriate

Appendix E Study Information Document- MHC users

A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA

Good day

Introduction

My name is Ezekiel Keoreng, and I am a student at Witwatersrand University doing masters by dissertation in nursing science. As part of the course content, I am required to conduct research and submit a written document to complete the course successfully. I, therefore, will be doing a clinical study, which is not part of the routine care but intends to find out from MHC users' views, and opinions of what they think will be the best programme to improve their birth preparedness and complication readiness. Men are included in this research as studies show that women benefited from improved ANC attendance, giving birth in health care settings, and increased maternal nutrition, among others, if men were involved in maternal health care (MHC). On the other hand, improved mental and socioeconomic development of children has also been linked with the early involvement of men in childbirth. It, therefore, becomes imported to ensure that South African MHC users are well prepared for their childbirths and are ready for complications that may arise. Also, the in-depth understanding of their birth preparedness and complication readiness (BPCR) could provide valuable information that possibly will assist in developing a functional and locally relevant programme for BPCR.

Invitation to Participate.

Accordingly, as a maternal care user, you are invited to take part in this study.

What is involved in the study?

Should you agree to participate, you will be expected to participate in a group discussion with other MHC users (both expectant women and men). The group discussion will consist of about 8 participants and is estimated to last at least two hours. A conducive place for the discussion will be arranged at the hospital, and the Covid-19 principles will be followed as per the government’s guidelines.

Confidentiality and Anonymity

The ethical principles of Social Justice, including privacy and anonymity, will be respected. Confidentiality is not assured during nominal group sessions, but participants will be asked not to discuss the proceedings outside of the group. Autonomy will be respected by ensuring

voluntary participation, and an information and consent form will be obtained from participants in the nominal group.

Benefits of being in the study.

There is no direct benefit to you from participating in this study.

Participation is voluntary.

Your choice to take part in this study is completely voluntary. Be informed that your right to autonomy will be protected, and you can choose to discontinue the study at any time without giving any reasons. There will be no legal obligation or any prejudice against you if you chose to discontinue the study.

Outputs

The study results will be made available to the public through conference presentations and publications. It will remain the property of Witwatersrand University.

Contact details of HREC administrator and chair.

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concerns over the way the study is being conducted, please contact the Chairperson of this Committee, who is Dir. Clement Penny, who may be contacted on telephone number 011 717 2301 or by e-mail at Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234, and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

Yours sincerely

Ezekiel Keoreng
MSc Nursing Science
Cell; +27633353646
E-mail; (student) 1829991@wits.ac.za

Supervisors

Mrs. Nomonde Makhudu
Contact Number: 0837254391
E-mail: Nomonde.Makhudu@wits.ac.za

Dr. Sue Armstrong
E-mail: Sue.Armstrong@wits.ac.za

Appendix F The Nominal Group Technique

Table 0-1: The Nominal Group Technique protocol (Potter, Gordon and Hamer, 2004)

1	Generating ideas	Each participant will be provided with a sheet of paper with the question to be addressed and asked to write down all ideas that come to mind when looking at the question. Participants will work silently and not discussing their ideas with others. Allow approximately 10 minutes.
2	Sharing ideas	Invite participants to share the ideas they have generated. The facilitator records each idea on a flip chart visible to all and uses the participant's words. The round-robin process continues until all ideas have been presented. There is no debate about items at this stage, and participants are encouraged to write down any new ideas that may arise from what others share. This process ensures all participants get an opportunity to make an equal contribution and provides a written record of all ideas generated by the group. This stage may take 15-30 minutes.
3	Discussion of ideas	Participants are invited to seek verbal explanation or further details about any of the ideas that colleagues have produced that may not be clear to them. The facilitator's task is to ensure that each person can contribute and ensure that the discussion of all ideas is thorough without spending too long on a single idea. It is important to ensure that the process is as neutral as possible, avoiding judgment and criticism. The group may suggest new items for discussion and combine items into categories, but no ideas should be eliminated. This stage lasts 30-45 minutes.
4	Voting and ranking	Individuals vote privately to prioritize the ideas. The votes are tallied to identify the group's ideas that are rated highest. To start, each group member selects the five most important items from the group list and writes one idea on each index card. The moderator establishes what criteria are used to prioritize the ideas. Next, each member ranks the five ideas selected, with the most important receiving a rank of 5 and the least important receiving a rank of 1.

Appendix G Study Information Document-Midwife Experts

A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA

Good day

Introduction

My name is Ezekiel Keoreng, and I am a student at Witwatersrand University registered for an MSc degree by dissertation in the Department of Nursing Education. The title of my dissertation is "A Programme to Improve Birth Preparedness and Complication Readiness in Johannesburg, South Africa". As part of this study, I need the expert opinion of midwives to validate the programme I am developing. An expert in this study is a midwife who has five or more years 'experience' working in the Maternal Obstetric Units (MOU) in Gauteng. Your opinion will be valuable in determining whether the programme for birth preparedness and complication readiness (BPCR), which I am developing, will be relevant to the local community and be effective in raising the awareness and practice of BPCR among MHC users.

Invitation to Participate.

Accordingly, as a midwife expert, you are invited to take part in this study.

What is involved in the study?

Should you agree to participate, you will be expected to participate in a group discussion with other midwife experts. The group discussion will consist of about 8 participants and is estimated to last approximately two hours. A conducive place for the discussion will be arranged at the MOU, and the Covid-19 protocols will be followed as per the government's guidelines. During the meeting, the developed programme from the study will be presented to you, followed by a question that will require you to brainstorm and agree on the best solution that answers the question.

Confidentiality and Anonymity

As you will be asked to participate in a nominal group, participants may very well recognize each other, and while the researcher will request confidentiality, he is not in a position to enforce it. Participants will, however, be asked not to discuss the proceedings outside of the group. Autonomy

will be respected by ensuring voluntary participation, and an information and consent form will be obtained from participants in the nominal group.

When the results of the study are published, you will not be identified by name, but your contribution will be allocated a code known only to the researcher and his supervisors. All data collected during the study will be securely retained for two (2) years if a scientific publication arises from the study and six (6) years if there is no publication. Thereafter it will be destroyed accordingly.

Benefits of being in the study.

There is no direct benefit to you from participating in this study.

Participation is voluntary.

Your choice to take part in this study is completely voluntary. Your right to autonomy will be protected, and you can choose to withdraw your participation at any time without giving any reasons. There will be no legal obligation or any prejudice against you if you chose to withdraw your participation.

Outputs

The study results will be made available to the public through conference presentations and publications. It will remain the property of Witwatersrand University.

Contact details of HREC administrator and chair.

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concerns over the way the study is being conducted, please contact the Chairperson of this Committee who is Dr. Clement Penny, who may be contacted by telephone number 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234, and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for reading this Study Information Sheet.

Yours sincerely

Ezekiel Keoreng

MSc Nursing Science

Cell; +27633353646

E-mail; (student) 1829991@wits.ac.za

Supervisors

Mrs. Nomonde Makhudu

Contact Number: 0837254391

E-mail: Nomonde.Makhudu@wits.ac.za

Dr. Sue Armstrong

E-mail: Sue.Armstrong@wits.ac.za

Appendix H Human Research Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

RI 4/49 Mr Ezekiel Keoreng

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M210251 MED21-01-126

NAME: (Principal Investigator)	Mr Ezekiel Keoreng
DEPARTMENT:	Nursing [redacted]
PROJECT TITLE:	A Programme to improve Birth Preparedness and Complication Readiness in Johannesburg, South Africa
DATE CONSIDERED:	26/02/2021
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Mrs Nomonde Makhudu and Dr Sue Armstrong

APPROVED BY: Dr C Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 09/06/2021

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and ONE COPY returned to the Research Office Secretary in Room 301, Third floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. I agree to submit a yearly progress report. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed February and will therefore be due in the month of February each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix I The research committee of Johannesburg Health District Approval

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Research Committee of
Johannesburg Health District

Enquiries: Ms. Busisiwe Sikhosana
Tel: 011 694 3909
Email :Busisiwe.Sikhosana@gauteng.gov.za
[redacted]
Private Bag X21, Johannesburg,
South Africa, 2017

07th June 2021

7 York Road
Parktown
Johannesburg
2193

Email: keoeze00@gmail.com

Dear: Mr Ezekiel Keoreng

TITLE: ***A PROGRAMME TO IMPROVE BIRTH PREPAREDNESS AND COMPLICATION READINESS IN JOHANNESBURG, SOUTH AFRICA.***

DRC Ref: 2021-04-003

NHRD Ref no: GP_202104_010

OFFICIAL APPROVAL

The Johannesburg Health District Research Committee (DRC) has reviewed your application. This letter serves as approval to access the Districts Health facilities (mentioned below) for the above research.

The following conditions must be observed:

- The facilities in which the research will be conducted are: [redacted]
- These facilities will be visited from: 07/06/2021 to 07/06/2022
- Participants' rights and confidentiality will be maintained all the time.
- No resources (Financial, material and human resources) from the above facilities will be used for the study. Neither the District nor the facility will incur any additional cost for this study.
- The study will comply with Publicly Financed Research and Development Act, 2008 (Act 51 of 2008) and its related Regulations.
- You will submit a copy (electronic and hard copy) of your final report. In addition, you will submit an annual progress report to the District Research Committee.
- Your supervisor and University Of The Witwatersrand will ensure that these reports are being submitted timeously to the District Research Committee.

Appendix J Pamphlet

Names:

File No.

What I already know about BPCR

Danger Signs (☐Pregnancy ☐Labour ☐ Postnatal)
Partners Involvement ☐ Saving Money ☐ Identifying Transport, ☐ Identifying Place of Childbirth, ☐ Identify Community Resources, ☐ My Rights and Responsibilities ☐ ANC Clinic Attendance ☐ Identify birth companion

What I need to Learn about BPCR

My BPCR Status **(rated by midwives)**

Contact	ratings					sign
	1	2	3	4	5	
1st visit						
4th visit						
Labour						
Postnatal						

The score is based on knowledge of BPCR components (1=low, 5=high knowledge)

Why should I learn about birth preparedness & complication readiness (BPCR)?

BPCR is a strategy that aims to reduce maternal and neonatal deaths. It helps women and their families to plan and overcome the delays that contribute to death, i.e., pregnant women will reach skilled care in time during an emergency.

How is this brochure going to help me to be prepared for birth and complication that may occur during my pregnancy and beyond? **(Learning Objectives)**

- We will learn how to be prepared for birth and be ready for complications that may arise during and after pregnancy
- We should be able to identify danger signs in pregnancy and during the postnatal period
- We should be BPCR by having 3 or more of the following: identified means to reach the hospital, have saved money, identified a birth companion, and bought clothes for the baby etc.
- We will learn about the roles of our partners and be able to encourage them in participating in our health.

Please visit (https://www.youtube.com/watch?v=yCxQOh3nR_8) on your smart-phone or computer to learn more about Birth Preparedness and Complication Readiness

BIRTH PREPAREDNESS & COMPLICATION READINESSS

Helping Women & their Partners to be more prepared for birth and its probable complications

Appendix K Poster

Birth Preparedness & Complication Readiness

Helping Women & their Partners to plan for Childbirth

What I NEED TO KNOW and Why?

Knowledge of key danger signs

- Pregnant women should know and understand the danger signs of obstetric complications.
- Knowledge of danger signs, help us to act quickly to decide and go to the hospital.
- We have spontaneous knowledge if we can name a danger sign without being asked about it.
- Danger signs are not the actual obstetric complications, they are symptoms that pregnant women and their partners can easily identify.

ANC visits with a skilled provider

- Early detection, prevention, and treatment of conditions during ANC promote positive pregnancy outcomes.
- We can learn more about birth preparedness if we attend Antenatal Clinics.
- ANC provides the basis for monitoring the wellbeing of the mother and child.
- Women and their partners plan to attend all ANC visits.

Knowledge of community resources

- We need to know about the resources available in our communities such as social services, religious groups, transportation systems.
- These can help us to seek and arrive at the care provider in time when complications arise during our pregnancies.

Save money for childbirth

Money is essential during pregnancy to pay for:

- Health services
- Food and clothing supplies,
- Transportation
- Other costs such as loss of work.

Identification of transport to a place of childbirth

- Pregnancy might have undesirable outcomes that require us to arrange transport ahead of time.
- We can quickly decide to go and be able to reach the hospital in time when complications arise.
- Lack of transport may result in delays which ultimately lead to severe complications.

Planning to give birth with a skilled provider

- Pregnant couples should plan for childbirth at a hospital identified by the government. All legal hospitals provide trained and skillful birth assistants, who are knowledgeable and can deal with most complications that occur during pregnancy.
- These health facilities are equipped with lifesaving equipment and resources, that may not be available at our homes.
- Besides, most babies born in our home have a lesser survival chance.

What are the DANGER signs?

These are life-threatening signs that we should be aware of and rash to the clinic when they occur. Kindly refer to your Maternal Case Record (the booklet you were given when you first registered for pregnancy) to learn more about dangers signs in pregnancy and after delivery. This information is inside the first cover of the booklet and at the back.

Please visit (https://www.facebook.com/100012161465277/videos/347128534244571/) to learn more about Birth preparedness and complication readiness

University of Witwatersrand
Email: 1829991@students.wits.ac.za

Acknowledgements: The information provide in this poster is taken from the Republic of South African Department of health's Maternal Case Record and the JHPIEGO's publication of "monitoring birth preparedness and complication readiness tools and indicators for maternal and newborn health.""

• Bgenge (2004) "Monitoring birth preparedness and complication readiness: tools and indicators for maternal and newborn health." Edited by R. C. Del Barco. Baltimore: JHPIEGO Brown's Wharf 1615, pp. 1–338. Available at: http://pdf.usaid.gov/pdf_docs/PNADA619.pdf (Accessed: 15 March 2020).

Appendix L Recommendations

Recommendations For Health Care Providers/Midwives

- Health care providers (midwives) should hold at least one midwife-led, ANC group counselling session by the time the women go into normal labour with maternal health care users (pregnant women and their male partners and or family a member).
- Health care providers will always follow the outlined standards of practice in their facilities and provide care that is appropriate, respectful and adequate.
- Health facilities should always provide sufficient staffing and adequate resources and equipment to ensure timely provision of care during emergencies.
- Health education and counselling on BPCR may be started preconceptionally at family planning clinics

Outline For Conducting ANC Group Counselling

- Identify a group of pregnant women attending ANC at the MOU and arrange a date for a group counselling session.
- Write invitation letters and hand them to the identified women to give and invite their male partners to attend the group counselling session.
- Some male partners may require an excuse letter for being absent from work. It may be helpful if the MOU gives them a written proof of attendance, stipulating the time they attended.
- Ensure to prepare a larger venue to accommodate the anticipated number of couples who will be attending the counselling session.
- Identify **Birth Preparedness and Complication Readiness** topics that will be discussed including danger signs, the importance of male partner's involvement, patients' rights and responsibilities, etc.
- A midwife or a health educator, trained on BPCR strategy, can lead these group discussions.
- During group meetings ensure equal participation by attendees. Encourage male participation, also allowing a section for questions and answers. Limit the session to half an hour where possible.