How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

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ABSTRACT

This thesis reports *How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?* Its' aim is to work together with midwives and obstetricians to identify steps and actions needed including identifying existing barriers to reduce postpartum haemorrhage. Postpartum haemorrhage is one of the major causes of maternal morbidity and mortality in Nigeria. Maternal mortality is very high in Nigeria with a global maternal mortality ratio estimate of 1,047 per 100,000 live births and varying maternal mortality ratio of 1,602 and 2,085 per 100,000 live births within Nigeria, as well as PPH incidence ranging from 6.0% to 18.5%. Prophylactic administration of uterotonic agents to mothers during the third stage of labour is effective for reducing postpartum haemorrhage. Despite the utilization of uterotonic agents in Nigeria, postpartum haemorrhage still occurs and even results in maternal deaths. There is little research about involvement and participation of midwives and obstetricians in the prevention of postpartum haemorrhage in Nigeria. This thesis fills the gap by investigating how working together with midwives and obstetricians can contribute to the prevention of PPH in a maternity unity in Nigeria. Action research was the approach taken to complete the study. A Cooperative inquiry framework was used to collect the data, which was then analysed using the Reflexive Thematic Analysis Technique. The data for this study emerged from seven cooperative inquiry meetings that involved nine group members, four midwives, four obstetricians and the initiating researcher. The study findings indicate the need to educate women and their families about ways to prevent anaemia which is a known risk factor for postpartum haemorrhage. The Participants in the study believed that high levels of anaemia in the pregnant women in their care for their maternity service was secondary to poor nutrition linked to poverty. An Action from the Group members was the need to educate and counsel women in their care on the intake of nutrition rich in iron to optimise their haemoglobin levels. Other Actions included educating women to work or engage in some form of trade so that they would have money and save money gradually. The Participants believed that by empowering women to make a change in their nutrition and prepare adequately financially for their pregnancy and childbirth would help prevent Postpartum Haemorrhage. A creative, new and unique action that emerged from one of the Cooperative inquiry group meetings included the development of a nutritional pictorial material with variety of food items to give women choice of food that they can eat, to optimize their haemoglobin levels and address cultural beliefs and practices on nutrition. Equally, new and unique was the education of women to do family planning that would enable them time to

replenish lost stores of iron before entering into another pregnancy. Furthermore, advocacy meetings were held with other stakeholders, healthcare managers to look for tangible support that would assist midwives and obstetricians to enhance the provision of maternal services. There was emphasis on the need for respectful maternal care to attract women to continuously use the maternity for skilled care of their pregnancy and childbirth. The findings indicate that the prevention of postpartum haemorrhage is the responsibility of multiple stakeholders including the women of Nigeria.

Keywords: Prevention of Postpartum Haemorrhage, Midwives, Obstetrician, Healthcare Providers, Action Research, Cooperative Inquiry

Statement of Original Authorship

I Esther Kpadamrophe Eyewumi Onokayeigho hereby certify that this work is my own work, written as a present registered candidate for the stated on the Title Page

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Esther Kpadamrophe Eyewumi Onokayeigho

CHAPTER ONE

INTRODUCTION TO THE THESIS

Introduction

This thesis provides an account of the experiences of midwives and obstetricians in the prevention of postpartum haemorrhage (PPH) in a Nigerian maternity hospital context. This researcher is a nurse/midwife and an educator. The need to address the issue of PPH in a scientific manner emerged from this researcher's reflection on the work of the Medical Missionaries of Mary (MMM)-a Catholic religious congregation founded in Nigeria by an Irish nun (Reverend Sister) Mother Mary Martin in 1937. Mother Mary's primary mission at that time was to help prevent mothers dying during and after childbirth. However, 87 years later the problem persists, with Nigeria having an extremely high maternal death of 28.5% of all estimated global maternal deaths and a very high estimated maternal mortality ratio of 1,047 per 100,000 live births in 2020 (WHO, 2023a, pp. 34, 35).

PPH is one of the leading causes of the high reported maternal morbidity and deaths in Nigeria (Okonofua *et al*., 2022, Ejekam *et al.,* 2021, Green *et al.,* 2015). For example, the study by Olawade *et al.* (2023) reported that 86.5% of maternal mortality was due to PPH. Despite studies from Nigeria confirming the use of medical interventions such as Active Management of the Third Stage of Labour (AMTSL) and oxytocin as the first line uterotonic medication to prevent PPH (Kalu and Chukwurah, 2022, Green *et al.,* 2015, Olowokere *et al.*, 2013), PPH is still a leading cause of maternal death in the country. Although, WHO (2012a), and International Federation of Gynaecologists and Obstetricians (FIGO), and International Confederation of Midwives (ICM) (2004) in their *Joint Statement Management*, recommended AMTSL and oxytocin as the first line uterotonic medication internationally (including Nigeria) for the prevention of PPH; its administration is a challenge in Nigeria where there is shortage of skilled birth attendants especially in the rural areas (Aluko *et al.,* 2019, Asibong, Akpan and Ayi, 2018, Oyetude and Nkwonta, 2015). So, in order to deal precisely with the problem of PPH among women, and as a consequence reduce the high maternal mortality, as early as 2006 Nigeria was the first country in the world to get approval for use of misoprostol uterotonic tablets that can be used in home deliveries especially in the rural areas for the prevention of

PPH (Jadesimi and Okonofua, 2006). The question remains why prevention of PPH is not more effective?

The existing literature provides a limited picture of what happens in maternity facilities and gives very little space for the voice of midwives and obstetricians to contribute to the challenges faced in the prevention of PPH. The evidence on the prevention of PPH is mainly quantitative, and midwives and obstetricians have/are yet to get the opportunity to add their voices to the discussion. There is a dearth of research that engages proactively with midwives and obstetricians, seeking their expertise and knowledge to prevent PPH in Nigeria; that is one of the key reasons for electing to conduct qualitative research that seeks to actively involve and engage with these two groups of maternity care professionals. It is this gap in the literature that compelled this researcher to investigate this central research question: *How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?*

Research Aim

To work together with midwives and obstetricians to identify steps and actions needed including identifying existing barriers to reduce Postpartum Haemorrhage.

Significance of the study

Studies conducted in Nigeria, using more quantitative approaches, present a clear picture of the magnitude and factors contributing to PPH, the major cause of maternal morbidity and mortality. International guidelines and protocols on the prevention of PPH are in place. Despite all the research and guidelines, the problem not only persists but in a global context remains extremely high in Nigeria. This study's significance rests on the fact that it focuses on the underlying complexities of clinical practise regarding PPH. The study population are midwives and obstetricians who represent the most important professionals in the Nigerian healthcare sector responsible for preventing and managing PPH in maternity hospital clinical settings. Capturing their experiences offer an alternative perspective on why this major obstetric health problem PPH persists. This study built on previous research (e.g., unanswered questions) and will update clinical practice in light of new findings.

Research Question

How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

Research Objectives

(1) To collaborate with the midwives and obstetricians to identify preventive measures and develop innovative knowledge on prevention of PPH.

(2) To create knowledge and awareness with midwives and obstetricians to prevent PPH.

(3) To collectively take action from the research to inform the utility of the current WHO (2018) guidelines for the prevention of PPH.

Definition of terms

AR	Action research
CI	Cooperative inquiry
FIGO	International Federation of Gynaecology and Obstetrics
FP	Family planning
HB	Haemoglobin
ICM	International Confederation of Midwives
IM	Intramuscular
IV	Intravenous
NMCN	Nursing and Midwifery Council of Nigeria
NPM	Nutritional pictorial material
MMR	Maternal mortality ratio
PPH	Postpartum haemorrhage
SDGs	Sustainable Development Goals
SHIS	State health insurance scheme
SBA	Skilled birth attendant
WHO	World health organisation
TBAs	Traditional birth attendants

Structure of the thesis

Chapter Two of this thesis provides the background and context to the study - the context of exploration of the experiences of midwives and obstetricians in the prevention of PPH in Nigeria. Chapter Three outlines a narrative review of the literature on PPH and related issues. In Chapter Four a discussion on the methodology is provided and a rationale for choosing action research and cooperative inquiry framework is outlined. Chapter Five presents a discussion of the method used to address the research questions. In Chapter Six the story of the journey of this cooperative inquiry is highlighted. In Chapter Seven the findings of the research are presented. Chapter eight provides a discussion on the findings in the light of evidence in the literature and a series of recommendations are presented.

CHAPTER TWO

BACKGROUND AND CONTEXT

Introduction

This chapter presents the background and context of this study titled: *How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?* As part of the background and context, it is vital to understand Postpartum Haemorrhage (PPH) in relation to maternal mortality globally and in resource-limited countries, particularly Nigeria, as this provides the clearest indication of the importance of PPH preventative efforts. The chapter begins with the clinical definition of postpartum haemorrhage, a key term in this study, as a means of establishing some of the general difficulties faced in diagnosing and measuring the severity of PPH. This discussion is followed by an overview of the Nigerian socio demographics- in which a brief description of local economic and social conditions that pertain to healthcare is outlined. The subsequent paragraphs provide an overview of the ratios of maternal mortality and deaths from PPH in a global context to further establish the importance and context of PPH prevention. Then, the focus of the chapter shifts to presenting what is currently known about maternal mortality and deaths from PPH in Nigeria. The chapter also presents a brief description of maternity care and services available in Nigeria and the midwifery and medical education in Nigeria, as a means of understanding the knowledge base of midwives and obstetricians working providing care to women. The chapter concludes with discussion on cultural and traditional beliefs issues in preventing PPH in Nigeria, and summary.

Definitions of Postpartum Haemorrhage (PPH)

Postpartum haemorrhage (PPH) is one of the obstetric haemorrhages (antepartum – bleeding before labour begins, intrapartum haemorrhage – bleeding before delivery, postpartum haemorrhage – bleeding after delivery). PPH is an obstetric complication that occurs during the third stage of labour (the period between the birth of the infant and the placenta). What is significant is that although PPH is recognised as a major obstetric complication, there is currently no agreed clear definition that embraces the complexity of postpartum haemorrhage in its many clinical presentations, leading to misjudgement and misdiagnosis (Oladapo *et al.,* 2020, Rath, 2011, Rajan and Wing, 2010) and mismanagement. A common definition of

PPH used internationally is vaginal blood loss that occurs in the space of 24 hours following childbirth, equivalent to or greater than 500 mL, and is severe when the blood loss is 1,000 mL or more (World Health Organization, 2017**)**. However, his definition has some drawbacks, one of which is the difficulty of assessing accurate objective measurements of blood loss in clinical practice where visual estimates are relied on more often and may be inaccurate (Bell *et al*., 2020, Diaz, Abalos and Carroli, 2018, Rath 2011, Schorn, 2010). Furthermore, Oladapo *et al.* (2020), and previously Rath (2011) claim that during delivery, blood mixes with amniotic fluid, urine, swabs, pads, drapes, and drips onto the floor, which makes the attainment of accurate measurement a significant challenge. Many reports, such as those by Oladapo *et al.* (2020), Green, Ojule and Mmom (2015) and Rath (2011), report that pregnant women having normal haemoglobin (Hb) level (>11g/dL) before giving birth will tolerate postpartum blood loss of such limits (500 mL) without hemodynamic symptoms (tachycardia, hypotension). In the same vein, Akter *et al.* (2021) indicated that the WHO definition (2017) is unsuitable for diagnosing PPH in women with anaemia. As mentioned earlier, it is clear from the discussion that the applicability of the WHO (2017) definition of PPH is limited, yet it generally guides practice (including Nigerian).

An alternative definition of PPH suggested is a 10% fall in the haematocrit level from the time of a woman's antenatal stage (American College of Obstetricians and Gynaecologists (ACOG), 2017, Combs, Murphy and Laros, 1991). According to Reinhart (2016, p. 575), haematocrit is 'the volume percentage of red blood cells (RBCs) in blood'. However, PPH, defined as a change in haematocrit, is not suitable for a critical condition such as PPH because of the delay in getting the blood test result (ACOG, 2017, Rath, 2011). In brief, a definition determining PPH by quantification of blood loss is not the most efficient and reliable. This has implications for how it is managed and treated in contemporary maternity care.

Furthermore, Oladapo *et al.* (2020) argues for a definition of PPH as blood loss during the postpartum period that may jeopardize a woman's life or result in haemodynamic instability. Weil (2005) defines *haemodynamic instability* as the reduction of the blood supply to the body's vital organs, which manifests as a shock with signs and symptoms that include low blood pressure (hypotension), abnormal blood rates, peripheral cyanosis, and confusion. However previously, Rath (2011) claimed definitions of PPH, which consider signs and symptoms of haemodynamic, are awkward, as there are indications that the mother is in danger,

instead, suggested that for an appropriate diagnosis of PPH, there is a need to make an adequate and precise assessment of blood loss during pregnancy, labour, and delivery to avoid the occasion of an alteration of the woman's vital signs. However, Oladapo *et al.* (2020) indicated that a definition that considers the haemodynamic is more suitable for resource-limited countries (like Nigeria), where most pregnant women may have low haemoglobin (Hb) levels.

To summarise, the lack of a universally acceptable PPH definition and a lack of consensus on how to measure and diagnose PPH has the potential to lead to uncertainty, indecisiveness and even confusion in a clinical setting. This is a significant issue for maternity care providers, particularly considering the rising rates of PPH internationally.

Overview of the Nigerian context

(i) Geographical-political structure

Nigeria is situated on the west coast of Africa and comprises 36 states and one Federal Capital Territory in Abuja, the seat of government (Gyuse, Ayuk and Okeke, 2018, National Population Commission and ICF International, 2014); with six geopolitical zones (regions) namely, Southwest, South East, South South, North East, North West, and North Central (see Appendix 1, Map of Nigeria). The states encompass 774 local government areas (LGAs) (National Population Commission and ICF International, 2014). The country runs a federal political system with three tiers of government - the federal, the state, and the local government (National Population Commission and ICF International, 2014).

Similarly, the healthcare delivery system operates following the three tiers of government – tertiary (Federal University Teaching Hospitals, and Federal medical centres), secondary (General hospitals) and primary (dispensaries and health centres) (Gyuse, Ayuk and Okeke, 2018, Olatubi *et al.,* 2018, National Population Commission and ICF International, 2014). Although the healthcare provision and financing are the concurrent responsibility of the different tiers of government, the federal government regulates the health system in Nigeria. However, Nigeria healthcare delivery system has been impeded by significant insufficient financing (Abubakar *et al.,* 2022, Olatubi *et al.,* 2018). According to Olatubi *et al.* (2018) in their review of Nigeria's healthcare expenditure noted that Nigeria spends only a meagre amount of 5.3% of its Gross Domestic Product (GDP) on healthcare. Similarly, Awowole *et*

al. (2018) indicated that in 2016, only 4.64% of the National budget was allocated to health. Furthermore, the government allocation for healthcare in recent years – 2022 was only 4.7%, while in 2023 was 5.75% (drpcngr.org). All the national budget already mentioned for healthcare falls short of the Abuja Declaration agreement of 2001. The Abuja Declaration was the agreement that the leaders of the WHO African Region made when gathering in Abuja, Nigeria, in 2001. The leaders committed to strengthening the national healthcare system by allocating 15% of the national budget to healthcare. Nigeria is one of the African countries that still needs to fulfil the Abuja Declaration (WHO, 2013).

It is worth noting that despite Nigeria demonstrating increased Gross Domestic Product (GDP) of $375.745 billion in 2017 and $397.27 billion in 2018 (World Bank, 2019), and more recently, rose to $477 billons in 2022 and $ 1.115 trillion in 2023, making Nigeria the biggest economy in for nearly a decade, yet the situation in the healthcare system has not improved. Furthermore, the study by Olatubi *et al.* (2018, p. 4) claim that *'…a good percentage of monetary allocation and acclaimed spending in Nigeria is lost to leakages and corruption in the system'*. In the context of the current unstable and corrupt political system in Nigeria and its failure to honour its financial commitment to national healthcare impacts negatively on the provision of healthcare which includes maternal healthcare and services.

(ii) Socio-cultural demographics

Nigeria is home to 374 ethnic groups, which gives the country a multi-ethnic and multi-cultural identity (National Population Commission and ICF International, 2014) and multi-religious belief systems (National Population Commission (NPC) [Nigeria] and ICF Macro., 2009). Although these national diversities exhibit great richness, the traditional ethnic beliefs and practices influence peoples' response to healthcare needs. According to Ononokpono (2015), peoples' ethnic origin has socio-economic and cultural qualities that impact on everything about their everyday lives. Cultural beliefs and practices of childbirth in Nigeria, especially in the northern part of the country, contribute to high maternal morbidity and mortality. For example, women do not have the right to seek healthcare without their husbands' permission, and some cultural norms restrict women from receiving healthcare outside their homes (National Population Commission and ICF International, 2014, Doctor, 2011). In addition, Olonade *et al.* (2019) indicated that some cultural beliefs forbid pregnant women from eating eggs and snails that have nutritional benefits such as iron that prevents anaemia. Although

women's health-seeking behaviour is not the focus of this study, it impacts the decision-making regarding childbirth and potential vulnerability to PPH.

Maternal mortality and mortality from Postpartum Haemorrhage (PPH) globally

(i) Maternal mortality globally

Maternal mortality is defined as 'the death of a woman 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' (WHO, 2012a, p.9). Maternal mortality is discussed in this section according to the Sustainable Development Goals (SDGs), which started on January 1st, 2016, and extends to December 31, 2030, a period of 15 years (WHO, 2023a). The discussion is specifically in relation to SDG 3 target 3.1., which is to reduce the global maternal mortality ratio (MMR) to less than 70 by 2030 (WHO, 2023a). Considering the global maternal mortality, WHO (2023a) reports that an estimated MMR of 223 maternal deaths per 100,000 live births, with 287,000 maternal deaths occur in 2020, which is high. However, sub-Saharan Africa region (includes Nigeria) accounted for approximately 70% of global maternal deaths in 2020, with an estimate of a very high MMR of 545 per 100,000 live births (WHO, 2023a).

(ii) Maternal mortality from Postpartum Haemorrhage globally

According to WHO (2023b) PPH is the leading cause of maternal mortality globally. In a WHO systematic analysis (2003-2009) of global causes of maternal deaths, reported haemorrhage (antepartum haemorrhage, intrapartum haemorrhage, and postpartum haemorrhage) as the leading direct cause of maternal deaths globally, and over two-thirds of those deaths were related to PPH (Say *et al*., 2014). Although Say *et al's* study is now outdated current studies (WHO, 2023b, Almutairi 2021, Finlayson *et al.* 2019, Salati *et al.* 2019) derived their information from it indicating its content is still relevant. Regarding deaths from PPH, Souza *et al.* (2013) in their WHO multicounty survey, confirm that PPH was responsible for maternal mortality and complications such as respiratory failure and cardiovascular dysfunction (maternal near miss) in women who survived PPH. These findings indicate the fatal nature of PPH. Furthermore, Oladapo *et al.* (2020) reported that deaths from PPH are mainly from resource-limited settings in Africa and Asia, due to the unavailability of adequate preventive and treatment measures. In addition, Sheldon *et al.* (2014) claim that approximately one-third of maternal deaths are from PPH, and attributed maternal death from PPH to inadequate

socioeconomic and infrastructural amenities, insufficient skilled birth attendants during deliveries, inadequate supply of quality uterotonic medications and poor access to required management of obstetric emergencies in middle-income and low-income countries. While insufficient amenities, and shortage of professionals could contribute to maternal mortality from PPH, evidence indicates that even with conventional practice such as active management of the third stage of labour (AMTSL), PPH is still a chief cause of maternal mortality (Say *et al.*, 2014). As the focus of this study is on the prevention of PPH and considering that PPH is the chief cause of maternal mortality globally, it is important to review the situation of maternal mortality in Nigeria.

Maternal mortality and mortality from Postpartum Haemorrhage (PPH) in Nigeria

(i) Maternal mortality in Nigeria

This section presents data on maternal mortality from the WHO, National Population Commission and ICF International and some individual studies conducted in Nigeria. The data clearly indicates that maternal mortality in Nigeria remains very high.

According to WHO (2023a) Nigeria had the highest number of maternal deaths and accounted for more than a quarter (28.5%) of all estimated global maternal deaths in 2020 (see Figure 2. 1), with approximately 82,000 maternal deaths, and an estimated MMR of 1,047 per 100,000 live births. Although the trends of the WHO MMR estimate for Nigeria have shown a gradual drop to an MMR of 1,047 per 100,000 live births, in 2020, it is still very high (see Figure 2. 2). In addition, the Nigerian 2020 MMR was disappointingly high compared to high-income countries. For example, in 2020, Ireland had an estimated MMR of 5 per 100,000 live births, Iceland had an estimated MMR of 3 per 100,000 live births, Belarus had an estimated MMR of 1 per 100,000 live births (WHO 2023a), a vast disparity from the Nigerian MMR. In addition, the WHO (2023a) highlighted that Nigeria, South Sudan, and Chad are three countries in sub-Saharan Africa with extremely high MMR in 2020.

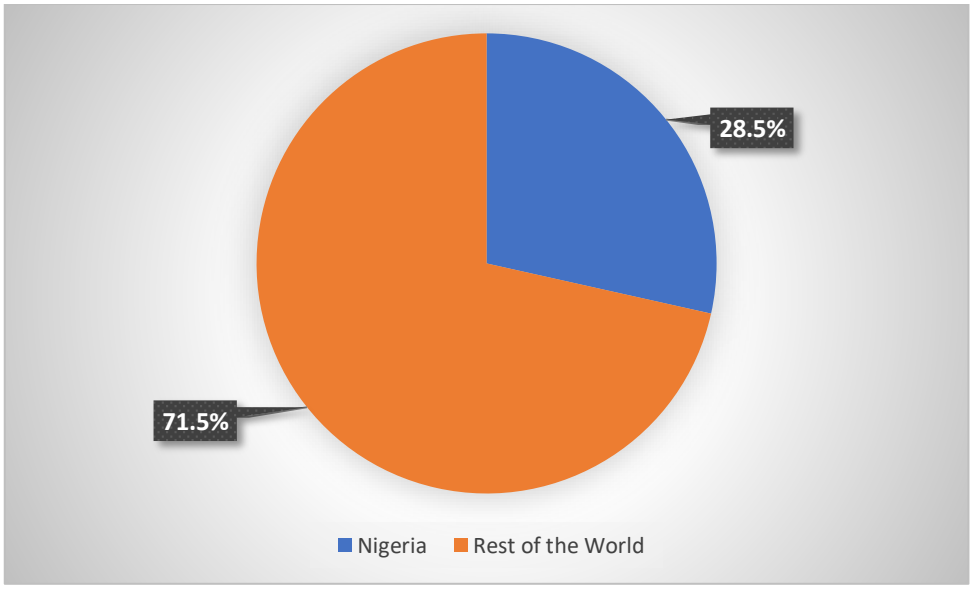

Figure 2.1: Percentage of Maternal Mortality (WHO, 2023a)

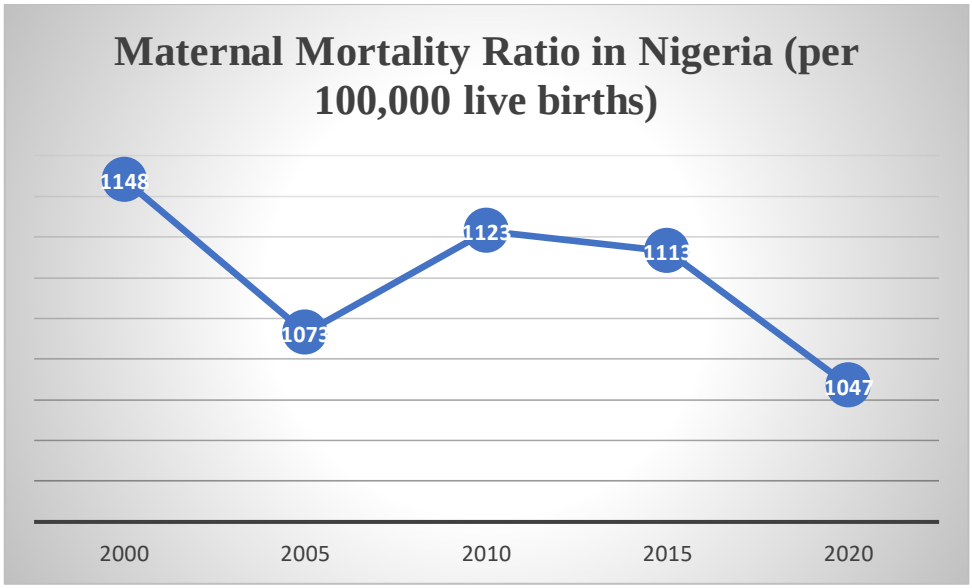

Figure 2.2: Gradual decline of Maternal mortality ratio for Nigeria between 2000 to 2020 (WHO, 2023a)

Although, the nationally aggregated estimation by the National Population Commission and ICF (2019) showed an estimated MMR of 512 maternal deaths per 100,000 live births, as slightly lower than the MMR of 576 reported in 2013 (National Population Commission and

ICF International 2014), it is however, still very high. Furthermore, studies from the geo-political zones also reflect higher maternal mortality trends.

Oladapo *et al*. (2015), from their multicentre study involving hospitals in the six zones of Nigeria, report an extremely high MMR of 1,088 per 100,000 live births. Similarly, Ntoimo *et al.* (2018), from their multicentre study in four zones in Nigeria (Northwest, North central, Southwest, and South South zones), report an even higher MMR of 2,085 per 100,000 live births. Furthermore, Ntoimo *et al.'s* (2018) revealed exceedingly high MMR in each of the hospitals in their study, the least being an MMR of 877 per 100,000 live births (from Southwest zone), and the highest MMR of 4,210 per 100,000 live births (from North central zone).

(ii) Financial issues as contributing factor of maternal mortality in Nigeria

Researchers, Olawade *et al.* (2023), Aikpitanyi *et al.* (2019), Olonade *et al.* (2019), Ntoimo *et al.* (2018) and Awowole *et al.* (2018) associate the high MMR to a lack of vital medications, the debilitating condition and lack of infrastructures, a shortage of skilled healthcare professionals, delay in attending to women in hospitals, substandard care in referral facilities (hospitals, TBAs, faith-based delivery homes), women not attending antenatal and women lacking money for treatment (poverty). Although the identified factors could contribute to high maternal mortality, high maternal mortality also occurs in developed zones such as Southwest zone in Nigeria (Awowole *et al.*, 2018), thus suggesting the need for research that explore how can midwives and obstetricians contribute to changing the situation.

A retrospective study by Awowole *et al.* (2018) in a tertiary hospital in Ile-Ife, in the Southwest zone, reported an MMR of 1,640 per 100,000 live births. It is worth noting that the MMR of 1,640 is within the high range of 877 - 4,210 per 100,000 live births compared to Ntoimo *et al.'s* study. However, another study in the Southwest zone by Oyeneyin *et al.* (2019) from a state-wide (Ondo State) confidential inquiry into maternal death reveals MMR reduction from 253 per 100,000 live births (June 1, 2012, to May 31, 2013) to an MMR of 170 per 100,000 live births (June 1, 2014 to May 31, 205). The observed reduction in the MMR (170 per 100,000 live births) is more than nine-fold lower than the MMR of 1,640 that Awowole *et al.* (2018) reported in their study.

Oyeneyin *et al.* (2019) attribute the reduction in the MMR to the introduction of the Safe Motherhood Program, which involved giving free maternal and child health services, with the availability of stipulated tertiary facilities that cared for pregnant women and children. In addition, Oyeneyin *et al.* indicate that the cash incentive given to unskilled birth attendants, such as traditional birth attendants[1] (TBAs) and faith-based birth attendants (prayer houses/Church), encouraged them to ensure early referral of women with uncomplicated labour in their care to the hospitals.

Subsequent studies that investigated maternal death in Nigeria through the utilization of the Maternal and Perinatal Death Surveillance and Response (MPDSR) also reported higher trends of maternal mortality ratio (MMR) (Okonofua *et al.*, 2017, Sageer *et al.*, 2019, Aikpitanyi *et al.*, 2019). The MPDSR is a sort of audit launched in Nigeria in 2016. The purpose is to identify and report the causes of maternal and perinatal mortality, and then appropriate actions are taken to avoid future occurrence of preventable deaths (Kinney *et al.* 2020). The study by Okonofua *et al.* (2017) in three referral hospitals in Lagos, Southwest, reveals an MMR of 1,602 per 100,000 live births, a very high ratio. Furthermore, the researchers noted from the MPDSR report that appropriate actions were not taken to resolve the identified causes of maternal deaths in the hospitals. Identified causes included delay in treatment, lack of equipment, late arrival of patent arrival in the hospital, lack of antenatal care (Okonofua *et al.*, 2017). The study findings suggest a lack of attention to the use of the MPDSR and its benefits.

Similarly, Sageer *et al*. (2019), in their state-wide study in the health facilities in Ogun State, Southwest, revealed MMR that ranged between 560-1,785 per 100,000 live births. The report of the MMR is high; even the MMR of 560, which is at the lower end of the scale, is more than three times higher when compared to the report of MMR of 170 per 100,000 live births Oyeneyin *et al.* (2019). Sageer *et al.* (2019) also attributed maternal mortality to reasons already mentioned. It is worth noting that even within the same zone, there are significant variations in the MMRs. The report of the high trend of maternal mortality is equally evident in the South South zone of the country.

[1] Traditional birth attendants (TBAs), are also called community birth attendants, traditional midwives, or lay midwives, who assist women locally during pregnancy and childbirth.

Aikpitanyi *et al.* (2019), whose study was in a secondary referral hospital in Benin City in South South zone, revealed an MMR of 395 per 100,000 live births. It is worth noting that the researchers indicate that the MMR of 395 (a very high MMR) is a reduction from a previous MMR of 2,992 (recorded in the hospital, January 1 to June 30, 2014). Aikpitanyi *et al.* (2019) indicate that the decline in MMR was through the use and implementation of MPDSR approach in three phases (within two years, October 1, 2017, to May 31, 2019) to identify issues that led to maternal mortality. While this more than a sevenfold reduction in the MMR (from MMR of 2,992 in 2014 to MMR of 395 in 2019) is a remarkable reduction, the MMR of 395 is still very high compared to high-income countries, as already indicated.

Although there are tremendous disparities in the MMRs in the different zones, the findings suggest that maternal mortality is still nonetheless very high in Nigeria. Therefore, the high maternal mortality calls for more urgent actions to reduce preventable maternal mortality in Nigeria. PPH, as indicated already, is also one of the leading causes of maternal death in Nigeria, as will be addressed in the following section.

(iii) Maternal mortality from PPH in Nigeria

There are no known national estimates for maternal mortality from PPH in Nigeria. However, studies by Olawade *et al.* (2023), Aikpitanyi *et al.* (2019), Sageer *et al.* (2019), Oyeneyin *et al.* (2019), Awowole *et al.* (2018), Ntoimo *et al.* (2018), Okonofua *et al.* (2017) and Oladapo *et al.* (2015) revealed that PPH is a significant cause of maternal morbidity and mortality in Nigeria. PPH is the primary cause of maternal mortality, among obstetrics haemorrhage (antepartum, intrapartum, and postpartum periods) (Olawade *et al.*, 2023, Aikpitanyi *et al.*, 2019, Sageer *et al.*, 2019, Awowole *et al.*, 2018). For example, Aikpitanyi *et al.'s* (2019) study demonstrated that PPH accounts for 55.5% of maternal deaths. Similarly, the study by Olawade *et al.* (2023) reported that PPH was responsible for 86.5% of maternal mortality, a very high percentage. In the same vein, Sotunsa *et al.* (2019) stated that PPH results in a high maternal mortality ratio (MMR) of 112 per 100,000 live births. Furthermore, studies indicate that complications of PPH in women who survived it include neurological, respiratory, renal failure, and severe anaemia (Sotunsa *et al.*, 2019, Ifeadike *et al.*, 2018, Oladapo *et al.*, 2015). These findings show the grave nature of PPH in Nigeria. Maternal morbidity and mortality from PPH in Nigeria persist, despite the implementation of the active management of the third stage of labour (AMTSL) and oxytocin medication as the first line internationally

recommended intervention for the prevention of PPH (WHO, 2012a, FIGO and ICM, 2004). Though, the administration of AMTSL and oxytocin uterotonic medication is a challenge in Nigeria because of the shortage of skilled birth attendants especially in the rural areas. However, evidence by Jadesimi and Okonofua (2006) reveals that Nigeria was the first country to get approval to use misoprostol tablets uterotonic medication, which can be administered by unskilled birth attendants (2006) to cover a wider scope of women population. Despite the interventions, maternal mortality and morbidity from PPH persist, thus, signifies that PPH is a significant health problem in Nigeria that needs urgent attention.

Overview of maternity care in Nigeria

As this study aims to explore with midwives and obstetricians, drawing on their experiences in a bid together to reduce the rates and prevent PPH, it is important to have an overview of the available maternity services and care and the education of midwives and obstetricians in Nigeria.

(i) Maternity care situation in Nigeria

Nigeria's three-tiered healthcare system is organised in primary, secondary and tertiary levels of care (Aikpitanyi *et al.,* 2019, Gyuse, Ayuk and Okeke, 2018, Olatubi *et al.*, 2018, National Population Commission and ICF International, 2014, Omo-Ahoja *et al.,* 2010). The goal of this kind of healthcare structure, is to facilitate an equitable healthcare delivery system, along the lines of what China has achieved (Feng *et al.*, 2017). Basic healthcare services are provided in the lowest tier, while more complicated services are offered on the second tier and advanced care is offered on the third tier. The primary health care level provides the first level of care and refers clients to the secondary and the tertiary facilities when complications such as PPH arise following childbirth (Okonofua *et al.,* 2017, Omo-Ahoja *et al.* 2010). According to Omo-Ahoja *et al.* (2010) access to maternity care services is at the primary healthcare facilities situated in the 774 Local Government Areas in the six geo-political zones in the country. However, Ntoimo *et al.* (2019) and Ademiluyi and Aluko-Arowolo (2009) indicate that the locations of the primary healthcare facilities in the country are concentrated mainly in the urban areas as a result the same degree of care is not accessible to most populations domiciled in rural areas. The uneven locations of maternal healthcare facilities have been shown to affect the utilization of maternal healthcare services, especially for women in the rural communities in Nigeria.

For example, the studies of Ntoimo *et al.* (2019) and Austin (2015) revealed that pregnant women did not utilize maternity services because of the extended distance from their homes to the facilities. The difficulty accessing the services suggests that such groups of women may not receive appropriate maternity care and would source alternative care methods. The weak healthcare system in Nigeria may contribute to many women patronizing the maternal services of traditional birth attendants (TBAs) and faith-based homes for their care during pregnancy and childbirth. Evidence shows that many pregnant women in Nigeria especially in the rural area prefer TBA and faith-based delivery homes (Ntoimo *et al.,* 2019, Awowole *et al.,* 2018, Okonofua *et al*., 2017). In addition, Ntoimo *et al.* (2019) study reveals that the women choice for TBAs was due to factors such as long distance (as already indicated), bad roads, inadequate resources in the facilities and abusive attitude of healthcare providers. These factors are of great concern especially as the outcome of the choice of going to the TBA and faith-based homes for some women has been tragic.

Evidence from research by Aikpitanyi *et al.* (2019), Sageer *et al*. (2019), Oyeneyin *et al.* (2019), Awowole *et al.* (2018) and Okonofua *et al.* (2017) indicate that the majority of the women who died were using services from traditional birth attendants and faith-based/mission homes, with unskilled birth attendants. In the same vein, the 2019 National Population Commission and ICF reported that only about 43% of pregnant women had skilled birth attendants during delivery, while a large proportion of pregnant women in Nigeria had unskilled birth attendants, such as the traditional birth attendants (TBAs), and some with no assistance during delivery (National Population Commission and ICF., 2019). In addition, Aikpitanyi *et al.* (2019), Sageer *et al.* (2019), Oyeneyin *et al.* (2019), and Okonofua *et al.* (2017) studies reveal that many maternal deaths occurred among women who did not register for antenatal care or receive antenatal care in a healthcare facility. However, Awowole *et al.* (2018) note that many of the women who died in the study had received antenatal care from various tiers of healthcare facilities that referred them, such accounts would question the quality of maternity care for the women.

In terms of the maintenance of the healthcare facilities, Nwakeze and Kandala (2011) note that the local government is responsible for running the primary healthcare facilities, but it does not have adequate funds to provide necessary maintenance, employ skilled healthcare

professionals, and maintain adequate supplies. The lack of funding suggests reasons for the facilities' deterioration and a dearth of resources. As indicated previously, such deficiencies also occur in the secondary and third levels of care (Aikpitanyi *et al.*, 2019, Ntoimo *et al.*, 2018, Awowole *et al.*, 2018), thus signalling the weak healthcare system in Nigeria. To address the challenges of maternal healthcare in Nigeria, the federal government inaugurated the Midwives Service Scheme (MSS) in 2009 (Okeke *et al.*, 2016, Okpani and Abimbola, 2016, Okoli *et al.*, 2016, Abimbola *et al.*, 2012). According to the researchers, the MSS is to provide skilled birth attendants to meet the needs of mothers during antenatal, delivery, and postpartum periods. The scheme comprises newly qualified midwives, unemployed midwives, and retired midwives employed at primary healthcare facilities, especially to the ones in rural communities (Okeke *et al.*, 2016, Okpani and Abimbola, 2016, Okoli *et al.*, 2016, Abimbola *et al.*, 2012). However, as Okeke *et al.* (2016), Okpani and Abimbola (2016) note, the MSS did not effectively achieve its objectives because of a lack of funding (as previously indicated). Compared to Sweden, where midwives recruited and sent to rural communities to provide maternity care, significantly reduced their maternal mortality (Hogberg, 2004). To have a broader context of this study, the following section explores the educational status of midwives and obstetricians (this study's population) in Nigeria.

(ii) Midwifery education in Nigeria

Midwives in Nigeria go through a formal midwifery education and training to be certified as midwives and skilled healthcare professionals. The midwifery education and practice in Nigeria is regulated by the Nursing and Midwifery Council of Nigeria (NMCN), a parastatal of the Federal Ministry of Health in the country (https://www.nmcn.gov.ng). The programme runs for three years (basic midwifery) and eighteen months (post-basic midwifery, for qualified nurses) respectively; candidates attain a diploma on successful completion (Oyetunde and Nkwonta, 2014, Ezenowu, 2013). It is equivalent to the international standard. The NMCN develops the curriculum for midwifery education and stipulates theoretical content (classroom teaching, laboratory practice/demonstration) and requirements for clinical practice in healthcare facilities (hospitals and community placement). The consolidative nature of the midwifery curriculum (both theoretical and clinical content) is designed to prepare the students to be proficient in applying theoretical knowledge in clinical care, under qualified supervisors (Ezenowu, 2013). Obstetricians' also go through standard professional education as in the following section.

(iii) Medical Education in Nigeria

Obstetricians equally undergo medical education before undertaking and selecting their specialty. Medical students go through a course of medical education in gynaecology and obstetrics. As stipulated in the national curriculum (Federal Ministry of Health of Nigeria, Health System 20/20 project, 2012), medical education (Bachelor of Medicine, Bachelor of Surgery (MBBS) (MBCHB) and Bachelor of Dental Surgery (BDS) are degree programs. The Medical and Dental Council of Nigeria (MDCN) and the National Universities Commission (NUC) are distinct bodies, each of which has the responsibility to develop the guidelines for the curricula. The MDCN developed the 'Redbook' for medical curricula, while the NUC developed 'Basic Minimum Academic Standards". The senate of each university has the responsibility to develop and approve the curricula for the program (Federal Ministry of Health of Nigeria, Health System 20/20 project, 2012). The formal medical training runs over the period of six years. Gynaecology and obstetrics are core parts of the programme. The medical educational programme is equivalent to international standard.

Cultural and traditional beliefs issues in preventing PPH in Nigeria

Nigerians and other Africans acknowledge God Almighty as their creator, despite their beliefs in cultural and traditional medicine (Archibong, Enang and Bassy, 2017, Adefolaju, 2014). These beliefs influence the people's responses to care of diseases and care during pregnancy and childbirth. According to Adefolaju (2014), many Nigerians in rural and urban communities patronise traditional medicine despite it being unrecognized by the National Healthcare System. In addition, the patronage of traditional medicine stems from the belief of some people that it protects them from evil forces. Such persons attribute the causes of disease or unfavourable events to witchcraft, evil forces, or failure to appeal to gods or deities (sun, moon, some earthly creatures) (Archibong, Enang and Bassy, 2017, Itina, 1997). As such these cultural, traditional and religious beliefs that some Nigerians hold, influence where they choose for care during ill health and pregnancy (Archibong, Enang and Bassy, 2017, Dike, 2013).

Furthermore, cultural beliefs impact many pregnant women to make their pregnancy known, so they avoid early antenatal care in the hospital until the pregnancy becomes obvious (Akeju *et al.* 2016). Whereas, early antenatal care would have been beneficial as it may aid in detecting women at risk for PPH and preventive line care would have been ensured. Instead, some pregnant women prefer to go to traditional birth attendants (TBAs) or faith-based homes

(churches) for care and delivery, even with the availability of hospitals in the locality (Archibong, Enang and Bassy, 2017, Akeju *et al*., 2016, Itina 1997).

As indicated in the maternity care section, fewer women (43%) used skilled birth attendants during childbirth. According to Archibong, Enang and Bassy (2017), Akeju *et al*. (2016), Adefolaju (2014), Agbiji and Landman (2014), Dike (2013) and Itina (1997), pregnant women's high usage of TBAs is because they are familiar with the TBAs and traditional healers and TBAs are accessible. Furthermore, pregnant women believe that traditional care and medicine satisfy their spiritual needs and heal and protect them from evil forces. Also, Adefolaju (2014) and Itina (1997) indicate that pregnant women and people choose to go to TBAs or traditional healers because it is affordable, or they can pay in kind. In addition, the study by Itina (1997) on TBAs in a clan in Akwa Ibom State (South-South) Nigeria indicates that many of the TBAs are not literate and lack obstetric education. Furthermore, the study reveals that some of the TBAs manage complicated deliveries using prayers, fasting and sacrifices, and consulting divine powers as they believe it is due to evil forces. Overall, TBAs are readily available choices for some pregnant women, especially in the rural areas of Nigeria.

Summary

This chapter presented aspects that placed this current study in an operational context. For example, researchers reported varied differing definitions of PPH. However, the WHO definition of PPH as vaginal blood loss that occurs in the space of 24 hours following childbirth, equivalent to or greater than 500ml, and is severe when the blood loss is 1,000ml or more (World Health Organisation, 2017); which some researchers referred to as limited generally guides practice. Also, studies indicated that despite Nigeria's increased gross domestic product, the country continues to allocate insufficient budget for healthcare, which equally impacts maternal healthcare services.

WHO presented maternal mortality as very high globally and PPH as the leading cause of maternal deaths. Similarly, WHO, from a global perspective, presented Nigeria's maternal mortality as extremely high. Also, studies from Nigeria presented very high maternal mortality and PPH as a leading cause of maternal mortality. Furthermore, this chapter presented Nigerian midwives and obstetricians as professionals with certified education comparable to international standards. Finally, studies also reported that traditional and religious beliefs and

practices and financial status impact some pregnant women's healthcare needs and choice of TBAs for care and childbirth. Also, the TBAs' lack of obstetric knowledge hinders them from being aware of PPH as a complication needing an immediate referral for expert management. The following chapter is a literature review of empirical studies.

CHAPTER THREE

LITERATURE REVIEW ON EMPIRICAL STUDIES

Introduction

This chapter presents past and current empirical studies on preventing postpartum haemorrhage (PPH) and the challenges encountered in Nigeria, where PPH is a leading cause of maternal mortality (Ejekam *et al.*, 2019). This study aims to explore, together with midwives' and obstetricians', how to contribute to the prevention of PPH in a setting in Nigeria. The reviewed studies are in four major areas regarding PPH prevention: biomedical causes and risk factors of PPH, active management of the third stage of labour (AMTSL) and the use of uterotonic medication for the prevention of PPH, knowledge of AMTSL for the prevention of PPH, and challenges in preventing PPH. This chapter ends with a summary.

The literature search follows a narrative review method. According to Bastian, Glasziou and Chalmers (2010), narrative reviews (NRs) form the basis of medical literature synthesis much more than systematic reviews. Collins and Fauser (2005) indicate that NR is 'irreplaceable' in tracking the background and progression of a clinical issue, (as in this study, the prevention of PPH) because it needs a wider scope studies/knowledge source (Sukhera, 2022, Greenhalgh, Thorne and Malterud, 2018).

In this current study, the rationale for employing a narrative literature review is primarily that the research topic and question are more exploratory, open-ended, and qualitative in nature and not the formulation of a well-defined question as required in the systematic review. The nonspecific selection criteria of an NR to include a wide range of studies gave the researcher the flexibility to include several kinds of studies with different levels of evidence: randomized clinical trials, observational case-control or cohort studies, case reports, and qualitative studies. To minimize this risk and improve the NR's quality, the researcher systematically reviewed the literature as outlined in figure 3.1.

Literature search strategy

The search in the databases produced a few studies conducted in Nigeria related to this research topic. Therefore, there was a need to include studies from other resource-limited/developing

countries with high maternal mortality ratios similar to Nigeria based on data from World Health Organisation (WHO, 2015). Reviewing studies from other resource-limited countries broadens our understanding of the challenges and issues faced in preventing PPH in the Nigerian context.

The conduct of a systematic literature search from electronic databases was to identify studies on the prevention of PPH. The databases utilised are PubMed, Cumulative Index to Nursing and Allied Health Plus (CINAHL), Embase, and Web of Science. The literature search starts from the millennium (the year 2000) because it was the moment in history when the spotlight was on the problem of high maternal mortality globally and in Nigeria.

The literature search starts from 01 January 2000 to 31 May 2023. There was the sourcing of studies published in English, scholarly and peer-reviewed articles, and human subjects from all the databases. The search terms used are from the research question: How can midwives and obstetricians contribute to the prevention of PPH in hospital in Nigeria? The search terms include: postpartum, haemorrhage, midwives, doctors/obstetricians, Nigeria, resource-limited countries, their synonyms, alternative spellings, and truncation symbols and were arranged into strings (see Appendix 2). Titles of identified articles were screened for relevant articles according to the clearly defined inclusion criteria, followed by the screening of the abstract and full articles. A further search was going through the reference lists of the articles.

Results

The search through the databases yielded 4,038 articles, and the addition of 12 articles from the reference lists of the retrieved articles gave a total of 4,050 articles identified. The exclusion of titles left 321 articles. After excluding duplicates, 116 articles remained for abstract review, and the exclusion of abstracts left 45 articles for a full assessment. This literature review includes forty-three (43) studies (see Figure 3.1). Five of the studies report on *biomedical causes and risk factors of PPH*, 17 reports on *active management of the third stage of labour and use of uterotonic medication for the prevention of PPH*, and 21 reports on the two last areas, *knowledge of active management of the third stage of labour for the prevention of PPH*, and *challenges in preventing PPH*.

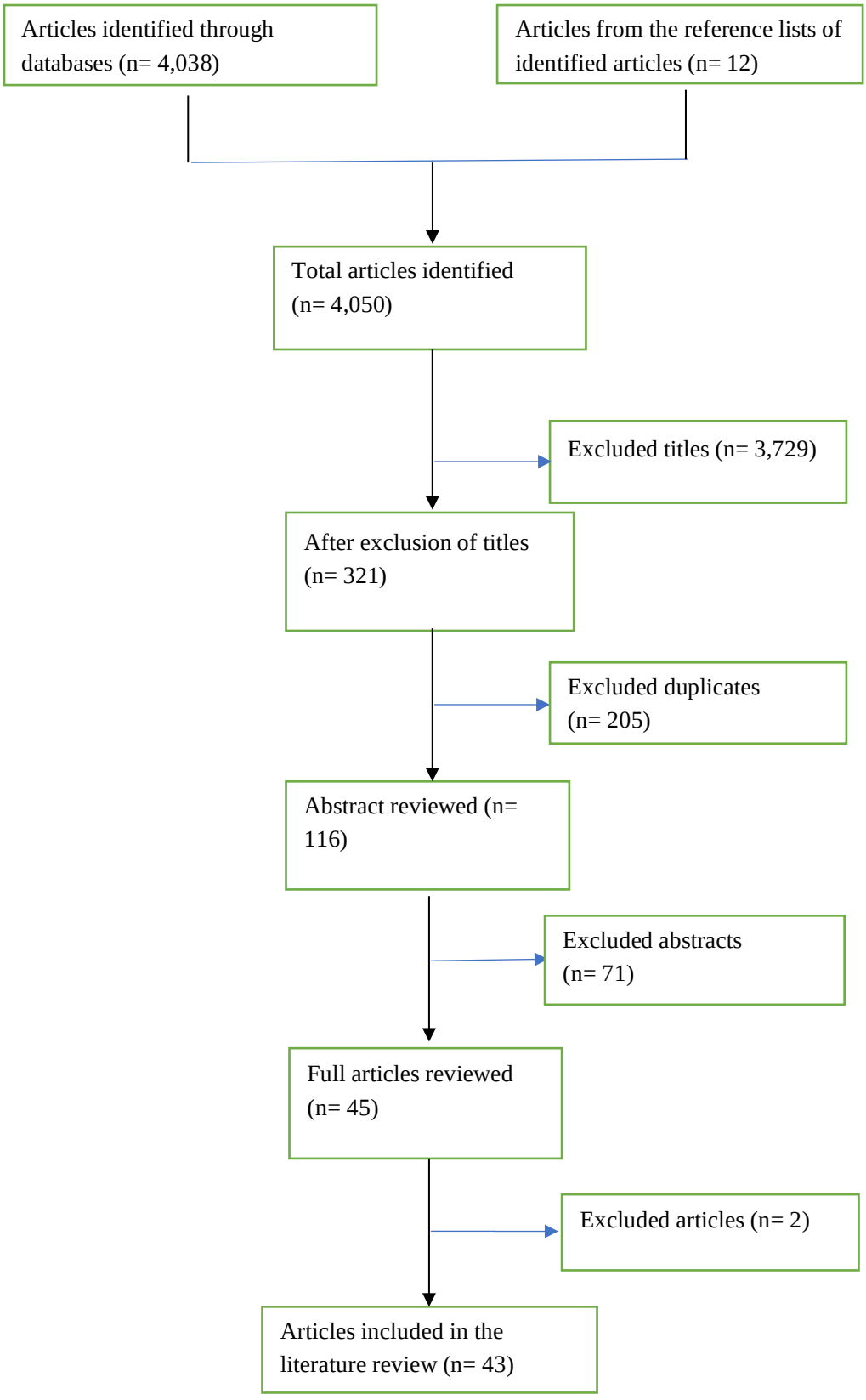

Figure 3.1: Flow diagram outline identified articles from databases and the selection of 43 articles included in the literature review.

Inclusion criteria

The inclusion criteria require only literature published in English, scholarly and peer-reviewed research, and the prevention of PPH in humans; studies from Nigeria, middle-income countries, Low-income countries, Low-resource countries, developing countries, and resource-limited countries; studies from clinical healthcare facilities (hospitals, maternity, primary healthcare, and medical centre) studies that utilize any study design (cross-sectional, case study, phenomenology, grounded theory, action research); studies on active management of the third stage of labour; studies involving skilled healthcare professionals/providers (midwives, nurse-midwife, doctors/obstetricians); studies on knowledge and perception of prevention of PPH, and studies on barriers to preventing PPH.

Exclusion criteria

This review excludes studies in: a language other than English; studies from high-income countries as they have lower maternal mortality ratio; and non-human studies; studies on haemorrhage due to any causes other than postpartum, studies on antepartum, and intrapartum haemorrhage; studies on educators and training for preventing PPH; studies in which uterotonic medications are for situations other than preventing PPH; studies that included only community extension health workers or junior community health extension workers as participants; studies involving women as participants, studies on preventing PPH in community settings; studies with traditional birth attendants (TBAs) as participants, and studies with participants in faith homes/churches.

Biomedical causes and risk factors of PPH

PPH is an obstetric complication associated with various biomedical causes and risk factors (WHO, 2012b). Evidences indicate different biomedical causes and risk factors of PPH. Studies by Ifeadike *et al.* (2018), Green *et al.* (2015), and Olowokere *et al.* (2013), report that PPH results from uterine atony, genital tract laceration, retained placental tissue, uterine sub-involution, coagulopathy, and gestational trophoblastic diseases. However, Green *et al.* (2015), from their retrospective cross-sectional study in Port Harcourt, Nigeria, that involved 3,694 deliveries, of which 178 (20.75%) women had PPH, reveals that uterine atony was the main cause. Similarly, a study from Zimbabwe by Ngwenya (2016) reveals uterine atony as the main cause (82.4%) of PPH. On the contrary, studies conducted in Nigeria by Ifeadike *et al.* (2018),

Olowokere *et al.* (2013), and Ajenifuja *et al.* (2010) report that retained placental tissue was the major cause of primary PPH, which raises questions about maternal care.

Furthermore, authors attribute the identified causes of PPH to various risk factors such as multiparity, grand multiparity, anaemia, age 30 years and above, primiparity, labour augmentation, induction of labour, instrumental delivery, perineum trauma, episiotomy, caesarean section, women who did not attend antenatal care, multiple gestations, chorioamnionitis, polyhydramnios, general anaesthesia, prolonged labour, previous history of PPH (Ifeadike *et al.*, 2018, Green *et al.* 2015, Olowokere *et al.*, 2013). Green *et al.* (2015) further report that caesarean section is PPH's most prevalent risk factor. The researchers further indicate that many PPH cases (63%) were among women who previously had a caesarean section. Similarly, a study from Uganda by Ononge *et al.* (2016) reveals that caesarean section exposes women to a higher risk for PPH, and suggests alternative modes of delivery, such as vacuum extraction or forceps delivery for women who cannot deliver vaginally, in order to reduce the incidence of PPH.

It is worth noting that some women without risk factors develop PPH. For example, evidence from a study in Uganda by Ngwenya (2016) reveals that about one-quarter of the women who developed PPH in the study were without known risk factors. As women without risk factors can develop PPH, it becomes more vital for healthcare professionals to adequately assess and monitor pregnant women during antenatal, labour, and postpartum periods to take appropriate measures to prevent PPH (Kalu and Chukwurah, 2022, Olowokere *et al.*, 2013). Kalu and Chukwurah (2022) study reveals that during the antenatal period, midwives assess, diagnose, and detect risk factors that link to the development of anaemia during pregnancy and correct anaemia by recommending prophylactic treatment of malaria, folic acid, and iron, and educating the women to take healthy diet to prevent complications of severe anaemia during childbirth. The following section discusses the various measures for the prevention of PPH.

Active management of the third stage of labour and use of uterotonic medication for the prevention of PPH

(i) Active management of the third stage of labour (AMTSL) for the prevention of PPH

This section presents WHO, the International Confederation of Midwives, and the International Federation of Gynaecology and Obstetrics (ICM/FIGO) (international bodies) recommended guidelines for preventing PPH to facilitate an understanding of the measures in place.

Given that PPH could occur in any woman during the third stage of labour, WHO (2012b) and ICM/FIGO (2004) recommend that all women receive AMTSL during the third stage to prevent PPH due to uterine atony. AMTSL is a package that consists of the administration of drugs plus non-drug interventions. ICM/FIGO (2004) previously describes AMTSL components as administering oxytocin, the uterotonic medication of choice within one minute after the infant's birth, controlled cord traction (CCT), and uterine massage after the delivery of the placenta. However, WHO (2017) and WHO (2012b) guidelines recommend variations in the AMTSL package: CCT is now optional, the delay of cord clamping is within 1 to 3 minutes, and no longer recommend sustained uterine massage for women who have prophylactic oxytocin because they experience discomfort. For example, evidence from the study by Sheldon *et al.* (2013) reveals that uterine massage did not contribute to reducing blood loss but increased the risk of PPH. However, WHO (2017) and WHO (2012b) recommend abdominal palpation for women after the delivery of the placenta to verify if the uterine muscles are well contracted and as a precaution against uterine atony.

Regarding the administration of uterotonic medication, WHO (2018) guidelines focus on prophylactic uterotonic medications as the significant component for preventing PPH. WHO (2018) guidelines recommend a variety of uterotonic medications such as oxytocin, misoprostol, ergometrine/methylergometrine, a fixed-dose combination of oxytocin and ergometrine, carbetocin, injectable prostaglandins (heat-stable), and misoprostol plus oxytocin combination - (see Appendix 3). However, WHO's preference is oxytocin because of its immediate efficacy within 2-3 minutes after administration and reduced side effects (WHO, 2018, WHO, 2017, WHO, 2012b). The following section presents studies from Nigeria on the use of uterotonic medications for the prevention of PPH.

(ii) Use of uterotonic medications for the prevention of PPH

Some researchers report uterotonic medications' effectiveness in preventing PPH in Nigeria (Kalu and Chukwurah, 2022, Agan *et al.,* 2018, Green *et al.,* 2015, Afolabi *et al.,* 2010). The reviewed studies, however, focus on comparing the relative effectiveness of the various uterotonic medications (oxytocin, methylergmetrine (ergometrine), misoprostol) for preventing PPH and with the fewest side effects. The summary of the literature review on the use of uterotonic medications to prevent PPH is in Table 3.1. Randomized controlled trials (RCT) by Oboro, and Tabowei (2003), Afolabi *et al.* (2010) and Musa *et al.* (2015) compare oral misoprostol and intramuscular oxytocin in the prevention of PPH in women at low-risk for PPH. Oboro and Tabowei (2003) and Afolabi *et al.* (2010) studies reveal a similar very low incidence of PPH (no incidence of PPH in both groups; 0% oxytocin group and 1.2% misoprostol group), respectively. The findings are, however, different in that Oboro and Tabowei (2003) used a higher dose of 600 µg misoprostol and reported a PPH incidence of 1.2%. While Afolabi *et al*. (2010), who utilized a lower dose of 400 µg, reported no incidence of PPH in the group.

Musa *et al*. (2015) study reveals a very high incidence of PPH in both groups (misoprostol group, 15%, and oxytocin group, 14%), despite the study being among women with low risk for PPH. Even though Musa *et al*. (2015) and Oboro and Tabowei (2003) used similar dosages of medication for their study (600 µg of oral misoprostol with 10 IU of intramuscular oxytocin), the incidence of PPH is higher in Musa *et al.'s* study. The difference could be the gap in the period the researchers conducted their studies in the different study settings. The studies of Musa *et al.* (2015) and Oboro and Tabowei (2003) report similar high side effects of shivering, diarrhoea, and pyrexia among women who received 600 µg of oral misoprostol.

Uthman *et al*. (2011) also conducted a randomized trial using 600 µg of oral misoprostol, compared with 10 IU intravenous oxytocin. Their study reveals a very high incidence of PPH among the women who received intravenous oxytocin (17.0%) compared to the misoprostol group (8.9%). Although the PPH incidence in the misoprostol group is lower than the finding in Musa *et al.* (2015) study (misoprostol group, 15%), the PPH incidence is higher than the PPH incidence report in the study by Oboro, and Tabowei (2003) (1.2%), who utilized similar high dose of misoprostol (600 µg). Uthman *et al*. (2011) finding of a 17.0% incidence of PPH in the oxytocin group is much higher than the PPH incidence of 14% reported in Musa *et*

al. (2015) study. Uthman *et al.*, however, attribute the high PPH incidence among the oxytocin group to a loss of potency due to high ambient temperature and inadequate storage due to a lack of electricity supply in the setting. The issues of ambient temperature are discussed in a subsequent section of the chapter.

A previous RCT by Enakpene *et al.* (2007) compared methylergmetrine (ergometrine) and misoprostol tablets in the prevention of primary PPH during labour in a hospital in Ibadan, Nigeria, revealed a low PPH incidence among the women who received oral misoprostol (1.2%) than the women who had intramuscular methylergmetrine (9.7%). The PPH incidence among the women who received misoprostol is similar to the finding by Oboro, and Tabowei (2003) (1.2%). Though Enakpene *et al.* used a lower dose of oral misoprostol (400 µg), while Oboro, and Tabowei used 600 µg oral misoprostol. A more recent RCT by Awoleke *et al.* (2020) in a tertiary hospital in Ado-Ekiti, Nigeria, also reported a high PPH incidence of 11.2% for women who received 600 µg misoprostol by rectal and sublingual route for the prevention of PPH. Although the incidence of 11.2% is lower than the PPH incidence report in the study of Musa *et al.* (2015) (15%), it is higher than the PPH incidence report in the studies by Oboro, and Tabowei (2003) and Uthman *et al.* (2011) (1.2%, and 8.9%, respectively). However, Awoleke *et al.* (2020) study is similar to the studies by Musa *et al.* (2015), Uthman *et al.* (2011), and Oboro, and Tabowei (2003) in the use of 600 µg misoprostol among women at low risk of PPH. Awoleke *et al.* (2020) further reveal a high PPH incidence of 15.7% in the rectal misoprostol group and 6.7% in the sublingual misoprostol group. Nevertheless, the Awoleke *et al.* study reports a substantial proportion of shivering and pyrexia among the women in the sublingual group.

The subsequent paragraphs review various randomized controlled trials that evaluated the effectiveness of an adjunctive uterotonic medication administered immediately after the use of active management of the third stage of labour to prevent postpartum haemorrhage (PPH) (Fawole *et al.*, 2011, Badejoko *et al.*, 2012, Ugwu *et al.* 2016, Muhammad *et al.*, 2019). Fawole *et al.* (2011) and Ugwu *et al.* (2016) studies that used similar sublingual routes revealed a PPH incidence of 6.36% in the placebo group and 6.08% in the 400µg misoprostol group; and 9.7% in the 400µg misoprostol group, and 8.1% in 200µg misoprostol group, respectively. Ugwu *et al.* (2016) finding is higher despite involving women at low risk of PPH compared to Fawole *et al.* (2011) study, which consists of a mix of women with low and high

risk for PPH. Side effects of shivering and pyrexia are prevalent in the 400µg misoprostol groups of both studies.

Badejoko *et al.* (2012) and Muhammad *et al.* (2019) studies which consist of women at high risk of PPH compare similar higher doses of adjunctive rectal misoprostol (600µg) with oxytocin infusion (20 IU). Both studies reveal a very high incidence of PPH (22.2% in the misoprostol group and 20.9% in the oxytocin infusion group; 19.6% in the misoprostol group and 18.5% in the oxytocin infusion group, respectively). The very high PPH incidence in the studies by Badejoko *et al.*, and Muhammad *et al.* is of concern, considering that the women had received AMTSL before administering the supplementary uterotonic medications. A point of note is that Muhammad *et al.* (2019) acknowledged that the high incidence of PPH in the study confirms the extent and burden of PPH in Nigeria. The studies of Badejoko *et al.* (2012) and Muhammad *et al.* (2019) are similar in reporting high shivering and pyrexia among the women who had rectal misoprostol. The incidence of PPH in the misoprostol groups of the studies by Badejoko *et al.* (2012) and Muhammad *et al.* (2019) are higher when compared to the misoprostol group (6.08%) in the study by Fawole A. O. *et al.* (2011), who also, used a lower dose of misoprostol (400µg) and administered via sublingual route.

Randomised controlled trials by Ezeama *et al.* (2014) and Orji *et al.* (2008) involving women at low risk of PPH compare ergometrine and oxytocin to prevent PPH. Both studies reveal a reduction of postpartum blood loss in ergometrine groups compared to the oxytocin group. Although ergometrine led to the reduction of blood loss, the studies by Ezeama *et al.* and Orji *et al.* also reveal that more women that received ergometrine had raised blood pressure. Caution is therefore necessary with the administration of ergometrine. Evidence from the study by Jago *et al.* (2007) in Makurdi, Nigeria, reveals raised blood pressure in more than 50% of women with normal blood pressure after the reception of ergometrine during the third stage of labour. It is worthy of note that such adverse effects from ergometrine makes the preference for using oxytocin injection to prevent PPH (WHO, 2012b).

The reviewed studies focus on specific treatment protocols and pharmaceutical treatments, and though relevant, they only give a partial picture. The literature did not indicate whether the medications are available in maternity units or only for study purposes. Besides, despite using different uterotonic medications, the incidence of PPH remains high in most of the studies. The

women in the aforementioned studies appeared to be treated as objects as they were not involved in the discussion of the prevention of PPH that was central to them. Although the voice of women is very valuable, for the purpose of this current study, given that very minimal space or opportunities for "voice" has been given to midwives and obstetricians, this study is interested in their practice, and experience of preventing PPH as experts. The following section is on the knowledge of AMTSL.

Table 3.1: Summary of the literature reviewed on the use of uterotonic medications for the prevention of PPH in Nigeria

Author(s) Name & Year of Publication	Research Methodology/Design	Participants	Findings
Musa *et al.* (2015)	Quantitative study (double-blind randomized controlled trial)	Women at low-risk for PPH who underwent vaginal delivery (n=200; 600 µg oral misoprostol group, n=100; 10 IU intramuscular oxytocin group, n=100) Ilorin, Nigeria	Very high incidence of PPH (blood loss greater than 500 mL) in both the misoprostol group (15%) and oxytocin group (14%); more women in the misoprostol group had fall in haemoglobin concentration, experience shivering, diarrhoea and pyrexia, and need for addition oxytocin.
Afolabi *et al.* (2010)	Qualitative study (Randomized double-blind trial)	Women at low risk of PPH who underwent vaginal delivery (n=200; 400 µg oral misoprostol group, n=100; 10 IU intramuscular oxytocin group, n=100) Ile-Ife, Nigeria	No incidence of PPH (blood loss > 500 ml) in the two groups. Women in the misoprostol group experienced side effect of nausea, both groups had similar experience of shivering.
Oboro, and Tabowei (2003)	Quantitative study (double-blind randomized controlled trial)	Women at low risk of PPH who had vaginal delivery (n=496; 600 µg oral misoprostol group, n=247; intramuscular oxytocin group, n=249) Delta State, Nigeria	Low incidence of PPH in oxytocin group (0%) and the misoprostol group (1.2%); extremely higher proportion of women in misoprostol group experienced shivering; and other side effects – pyrexia, nausea, vomiting, diarrhoea, were not substantially different in both groups.
Uthman, *et al*. (2011)	Quantitative study (Randomized clinical trial)	Women who underwent vaginal delivery (n=1,800; oxytocin group, n=900; misoprostol group, n=900) Maiduguri, Nigeria	Very higher incidence of PPH (17.0%) in the intravenous oxytocin group compared to the misoprostol group (8.9%); more women in the oxytocin group had fall in the haemoglobin level, and received extra uterotonic medications.
Enakpene *et al.* (2007)	Quantitative study (randomized controlled trial)	Women who had vaginal delivery (n=864; oral misoprostol group, n=432; and intramuscular ergometrine, n=432) Ibadan, Nigeria	More reduction of blood loss (≥ 500 mL) with the women who received oral misoprostol (1.4%) than the women who had intramuscular methylergmetrine (9.7%); more women in the misoprostol group had manual removal of placenta, experience side effects of pyrexia and fever; and more women in the methylergmetrine group experience side effects like headache, nausea and vomiting.
Awoleke, *et al*. (2020)	Quantitative study (Randomized controlled trial)	Women who underwent vaginal delivery (n=206, received 600 mcg misoprostol; group A rectal, n=102; n=group B sublingually, n=104) Ado-Ekiti, Nigeria	Misoprostol administered as a uterotonic, result in high incidence PPH (11.2%). Very high incidence of PPH in rectal misoprostol group (15.7%) compared to sublingual group (6.7%), and substantial proportion of women in sublingual group experience shivering and pyrexia.
Fawole, *et al.* (2011)	Quantitative study (double-blind, randomized,	Women low and high risk of PPH who had vaginal delivery (n=1,345; 400 µg sublingual misoprostol group, n=672; placebo group, n=673)	PPH incidence of 6.36% among the women in placebo group, compared with 6.08% in the among the women in misoprostol; more women in the placebo group had extra oxytocin, manual removal of placenta, blood

	placebo-controlled trial)	Multicentre, Nigeria	transfusion, and hysterectomy; side effects of shivering and pyrexia prevalent in the misoprostol group.
Ugwu, *et al* (2016)	Quantitative study (Randomized controlled trial)	Women at low risk of PPH who had vaginal delivery (n=124; 200µg misoprostol group, n=62; 400µg group, n=62) Ibadan, Nigeria	PPH incidence are comparable in both groups (8.1% and 9.7% respectively), women who received 200µg misoprostol experienced less adverse effects, while the occurrence of shivering pyrexia are more in the 400µg sublingual misoprostol group.
Badejoko, *et al.* (2012)	Quantitative study (double-blind randomized controlled trial)	Women at high risk to PPH who underwent vaginal delivery (n=264; 600µg rectal misoprostol group, n=132; 20 IU oxytocin infusion, n=132) SouthWest, Nigeria	Very high incidence of PPH in both groups (22.2% and 20.9% respectively), more side effects of vomiting, shivering and pyrexia occurred in the misoprostol group.
Muhammad, *et al.* (2019)	Quantitative study	Women at high risk to PPH who had vaginal delivery (n=110; group 1, n=56; group 2, n=54) Abuja, Nigeria	Very high incidence of PPH in both groups (misoprostol group – 19.6%, oxytocin group – 18.5%), comparable change in haematocrit, and need for supplementary uterotonic medication, occurrence of shivering and pyrexia were more among the women who had rectal misoprostol than those who had oxytocin infusion.
Orji E. *et al.* (2008)	Quantitative study (Prospective randomized controlled trial)	Women at low risk of PPH who had vaginal delivery (n=600; intravenous oxytocin group, n=297; intravenous ergometrine group, n=303) SouthWest, Nigeria	Comparable incidence of PPH in both the ergometrine group (5.9%) and oxytocin (4.0%); substantial number of women in the ergometrine group received extra oxytocic medication, had retained placenta and removal of placenta, high rate of the side effects like nausea, vomiting, headache, and raised blood pressure.
Ezeama, et al (2014)	Quantitative study (Randomized double-blind trial)	Women at low risk of PPH who had vaginal delivery (n=300; 0.5 mg intramuscular ergometrine group, n=149; 10 IU intramuscular oxytocin group, n=151) Nnewi, Nigeria	Substantial reduction in postpartum blood loss among women who received intramuscular ergometrine compare to intramuscular oxytocin group (ergometrine group, 287.1 ± 84.4; oxytocin group, 301.8 ± 109.2); post delivery packed cell volume (ergometrine group, 31.6 ± 2.0; oxytocin group, 30.3 ± 1.7); similar rate of adverse effects such as headache, nausea, and vomiting in both groups; extremely higher diastolic hypertension in the ergometrine group; and high rate of placenta retention in the oxytocin group.

Table 3.2: Summary of the literature reviewed on the knowledge of Active Management of the third stage of labour for the prevention of PPH

Author(s)	Design	Participants	Data collection method	Findings
Oladapo *et al.* (2009)	Quantitative study (Descriptive cross-sectional survey	Obstetric providers in (Nurse/midwives and doctors, n=361) SouthWest zone, Nigeria	self-administered questionnaire	Three hundred and twenty-seven (90.6%) of the participants were aware of AMTSL as an obstetric intervention. One hundred and seventy-three (47.9%) were aware of FIGO/ICM recommendation on AMTSL, and just 102 (28.3%) participants were found capable to effectively recognise the components of AMTSL according to FIGO/ICM guidelines. Having knowledge of AMTSL is linked to professionals upgrading.
Onasoga, Awhanaa and Amiegheme (2012)	Quantitative study (Descriptive non-experimental survey)	Midwives (n=80) in Tertiary Hospitals Yenagoa, Nigeria	Self-structured questionnaire	Eighty five percent (85%) of the participants exhibited a high knowledge of strategies for prevention and management of PPH. Knowledge of AMTSL associated to regular upgrading by attending seminars, workshops, and in-service training.
Oyetude and Nkwonta (2015)	Quantitative study (Descriptive study)	Midwives (n=177), in Primary Healthcare Centres, in Anambra State, Nigeria	Structured questionnaire and observational checklist	The majority of midwives (66.7%) exhibit high knowledge of AMTSL, and significant number of the midwives (78%) indicated do practice of AMTSL. The utilization of observational checklist however, reveal just 41% of the midwives practice AMTSL, the majority of the participants practice individual components. Factors that inhibit the midwives' practice of AMTSL are inadequate midwives, lack of oxytocin, mothers not cooperating during labour, and the practice of AMTSL as a cumbersome process.
Asibong, Akpan and Ayi (2018)	Quantitative study (Descriptive cross-sectional survey)	Non physician birth attendants (nurse midwives, general nurses, community health officers (CHO), and community health extension workers (CHEWs, n=116) in Primary Healthcare Centres	Interviewer-questionnaire	More than half of the participants (57.8%) report having knowledge of AMTSL and up to 62.1% indicate practice it, however, just a few (20.4%) respond to the practice AMTSL according to FIGO/ICM guidelines for the prevention of PPH. Having adequate knowledge of AMTSL linked to accurate practice, and a link between having sufficient knowledge with correct practice of AMTSL and years of practice. Barriers to effective practice of AMTSL include participants not having sufficient knowledge (30.2%), shortage of qualified midwives, lack of in-service training and workshop, lack of uterotonic medications and, lack of governmental policy.

		Calabar, Nigeria		
Bulndi *et al.* (2017)	Quantitative study	Skilled birth attendants (nurses, midwives, nurse-midwives, community health extension workers (CHEWs), and junior community health extension workers (JCHEWs), n=100), in Primary Healthcare Centres Jos, Nigeria	Questionnaires	Eighty percent (80%) of the nurse-midwives (dual qualified) exhibit high level of knowledge and management skills of PPH. Important link between having knowledge, with professional qualification, knowledge and years of working experience facilitates participants clinical skills and knowledge, and 70% of the participants indicate able to refer clients to other healthcare facilities. Eighty four percent (84%) of facilities have no form of transportation or ambulance to refer clients in emergency, and 60% of the participants had no PPH protocol for managing PPH.
Kalu and Chukwurah (2022)	Qualitative study	Midwives (n=15), in rural healthcare facilities. Abia State, Nigeria	Interview	Midwives identified the following ways in preventing PPH: -During antenatal period, by the provision of care that include – assessment, diagnosis and treatment of anaemia as crucial during pregnancy, correcting anaemia by recommending folic acid and iron, prophylactic treatment of malaria, and educating the women to take healthy diet so as to prevent complications of severe anaemia during childbirth. -During labour and childbirth, the midwives prevent and reduce risk of bleeding by guarding the perineum during childbirth, minimising the use of episiotomy and ensuring timely suturing of perineum, the manual removal of placenta, and the administration of uterotonic medication such as oxytocin and misoprostol to manage the third stage of labour. The participants acknowledge the need for professional upgrading. Barriers: shortage of staff, inadequate equipment and medication, women late arrival to maternity units for care.
Angelina, Kibusi and Mwampagatwa (2019)	Quantitative study (a cross-sectional study)	Nurses and midwives (n=172) Dodoma region, Tanzania	Questionnaire, and observational checklist	Participants exhibit unsatisfactory knowledge (44%) and exhibited insufficient clinical skill (38.4%) on the prevention and management of PPH. More registered nurses expressed better knowledge (60%) than the enrolled nurses (35%) on prevention and management of PPH. The variation in the level of knowledge was linked to professional qualification, years of training, and work experience in a maternity unity.
Carnahan *et al* (2016)	Quantitative study (Cross-sectional	healthcare providers (midwives, nurses, doctors/clinical officers,	Self-administered questionnaire	Only 6.1% of the participants have adequate knowledge and practice of all aspects (risk factors, diagnosis and causes of PPH) of prevention and management of PPH. Participants request for education on management of PPH,

	study, survey)	n=115, from 13 healthcare facilities. Da es Salaam, Tanzania		Barriers: inadequate medication and supplies, faulty storage system of oxytocin in some facilities and lack of funds and transportation as obstacles to PPH related transfer.
Ramadhani, Liu, and Lembuka (2020)	Quantitative study (a cross-sectional survey)	Nurse-midwives (n=160) Dar es Salaam, Tanzania	Questionnaire	Nurse-midwives very knowledgeable (100%) of AMTSL, and as being recommended for the prevention of PPH, but practice individual components of AMTSL. The high knowledge level was linked to demographic characteristics and being trained on AMTSL (in-serve or preservice training.) Self-reported correct use of AMTSL report less than half (47.88%) of nurse-midwives demonstrate appropriate use of AMTSL during third stage of labour. Barriers to utilization of AMTSL are inadequate skilled healthcare professionals and equipment, different version of AMTSL guidelines, being newly qualified, busy work environment.
Felarmine, Joachim and Agina (2016)	Quantitative study (Cross-sectional design)	Skilled birth attendants (n=203), Health facilities (n=28) Kiambu County, Kenya	Non-participant observation – checklist, and interviewer administered questionnaire	Just 31.5% of skilled birth attendants that used AMTSL according to the guidelines. Also, the use of AMTSL is greater (34.7%) with the skilled birth attendants in facilities where there are supplies and readily accessible such as oxytocin, needles and syringes in the labour ward (accessible when needed), facilities where are staff who can authorise supplies (34.9%), facilities that have a fridge (44.5%) and 'standard documents in the labour wards (68.0%). Barrier to practicing AMTSL are lack of equipment or storage of AMTSL equipment in facilities.
Muthoni, Kabue, and Ambani (2021)	Quantitative study (Descriptive cross-sectional design)	Midwives (n=85) Muranga county, Kenya	Self-administered questionnaire, and an observational check list	Significant proportion of the midwives expressed having the correct knowledge of the prevention of PPH, but only a few correctly demonstrate the three components of AMTSL (administration of a uterotonic, CCT, and uterine massage), substantial number of midwives mention oxytocin as the uterotonic of choice according to WHO, management of PPH, few midwives have mention able to diagnosis PPH. Socio-Demographic Characteristics that significantly influenced the midwives' management of PPH are: age, professional qualification, and experience in managing PPH.
Natarajan *et al*. (2016)	Mixed methods study (Descriptive cross-sectional survey)	Health providers (n=134), Peripheral Health facilities (39) Freetown, Sierra Leone.	Interviews	Some proportion (62%) of the providers regularly use of uterotonic medications, and the use of prophylactic uterotonic medications was common among providers that had in-service training of which AMTSL was part of the programme, PPH protocols were present in the facilities. Participants buy oxytocin when for use, when the unit run out of supply. Barriers identified include a greater number (64%) of the facilities stored oxytocin at room temperature, irregular supply of uterotonics (39%) in some of the facilities, inadequate knowledge of AMTSL, providers belief of no need to give prophylactic uterotonic medication to women with normal deliveries with no haemorrhage.

Braddick *et al.* (2016)	Mixed-methods study	Women undergoing delivery (n=154), Maternal healthcare staff (midwives n=9, nurse-midwife n=1, doctor n=1), Healthcare professional interviewed (n=18) Uganda	Direct observation, Semi-structured face-to-face interviews	Most participants practiced individual component (one components) of AMTSL guidelines according to WHO (2012), administered oxytocin during the third stage of labour, to 105 (68.2%) women, controlled cord traction (CCT) to 119 (77.3%), to deliver the placenta, cord clamping was done within 1-3 minutes at the completion of delivery of 37 out of 60 (61.7%) women. Only one-third of the women (34.0%) had the three AMTSL components (administration of uterotonic medication, CCT, and delay cord clamping). Facilitators associated with adherence to evidence-based practice identified by participants from hospital maternity unit include: availability and accessibility of oxytocin, in-service training and workshops, obstetric and gynaecological departmental meetings, reading textbooks and journals, and 'informal sharing of knowledge and experience'. Embracing of new practice like AMTSL is possibly facilitated when it is introduced and encouraged by a senior staff member. Barriers that hinder the implementation of guidelines included: lack of upgrading, lack of supply of oxytocin in the community health centres, poor oxytocin storage systems, lack of PPH medications and other supplies, and shortage of skilled healthcare professional.
Bimbashi, *et al.* (2010)	Quantitative study (Survey)	Obstetricians (n=27) Tirana, Albania	Questionnaire	A greater proportion of the obstetricians (78%) regularly used AMTSL, just above half (56%) of gave uterotonics after cord clamping, often utilized intravenous oxytocin, and the majority (71%) clamped cord within one minute. A large number of the obstetricians (87%) used a prophylactic uterotonic, which was given after cord clamping, record of practice showed that controlled cord traction was used for half of the births but not during caesarean section.
Hammah and Donkor (2013)	Quantitative study	Midwives (n=50) Accra, Ghana	Questionnaire and checklist,	A significant proportion of the midwives (40, 80%) indicate that they practice AMTSL, (36, 72%) give oxytocin to mothers after delivery of the infant, (52%) state the delivery the placenta is when contraction is felt by the midwife, administer a uterotonic medication following ICM/FIGO protocol to just above half (79, 53%) of the deliveries conducted, examined less than half (33%) placenta of the deliveries. Barriers to the correct use of AMTSL are lack in-service training on AMTSL, shortage of skilled healthcare professionals, lack of supplies, faulty system of oxytocic medication storage.
Wake and Wogie (2020)	Qualitative study	Midwives (n=278) Tigray region, Ethiopia	Observational checklist Interview questionnaires	A substantial proportion of the midwives (230, 82.7%) have knowledge of all three components of AMTSL, and 121 (43.5%) exhibit satisfactory practice of AMTS. Knowledge and practice are link to having training in AMTSL, educational level link to the practice of AMTSL, and the level of knowledge is link to practice of AMTSL. 246 (88.5%) indicate the recommended dose of oxytocin administered during AMTSL and indicate the correct time for the administering oxytocin (within 1 minute) following the birth of an infant.
Schack *et al.* (2014)	Qualitative study	Midwives (n=12) Accra Ghana	In-depth interviews	Midwives value AMTSL for preventing PPH, though belief that bleeding during labour is according to fate of the woman, omits AMTSL when busy with a lot of clients in labour, do not

				consider need to give AMTSL to women with no risk factors for PPH, non-adherence to PPH guidelines. Barriers include: hierarchical structures impede on novice midwives circulate knowledge about AMTSL, shortage of skilled healthcare professionals, lack of resources, inadequate knowledge of AMTSL, mothers find uterine massage an uncomfortable experience, and even regard it as an interference.
Flanagan *et al.* (2021)	Qualitative study	Healthcare providers (doctors, midwives, nurses, trainees, medical supervisors, n= 26), Postpartum women (n= 11), Community health volunteers (n= 7) Madagascar	In-depth interviews	Behavioural barriers that hinder providers from conforming to best practices for PPH prevention and monitoring measures are the almost non-existence of PPH observed by providers in the facilities impact on their decision to adhere to practicing AMTSL as recommended in the guidelines, not getting feedback on untimely administration of oxytocin and from the community on the outcome of early discharge of women and missed incidence of PPH. Challenges: the shortage of essential supplies and medications for PPH management, providers, inadequate electricity, transportation, and clients with financial constraints.

Knowledge of active management of the third stage of labour for the prevention of PPH

Knowledge and practice of AMTSL in the literature revolve around the ICM/FIGO (2004) and WHO-recommended guidelines (2012b), which are the gold standard for clinical practice. FIGO (2012) notes that guidelines are relevant texts on effectively preventing PPH. Evidence from Nigeria supports the practice of AMTSL as it lowers the incidence of PPH and thus helps to reduce morbidity and maternal mortality (Kalu and Chukwurah, 2022, Ifeadike *et al*., 2018, Olowokere *et al*., 2013). Similarly, Schack *et al*. (2014) from Ghana and Natarajan *et al*. (2016) from Sierra Leone, acknowledge the benefit of AMTSL for preventing PPH. Natarajan *et al*. finds that participants' value for AMTSL motivates them to buy oxytocin when the supply runs out to ensure it is available when needed. Several studies in Nigeria explore healthcare professionals' knowledge about preventing PPH. The studies reviewed in this section mainly concern healthcare professionals' knowledge and practice of preventing PPH with AMTSL and uterotonic medications. A summary of the literature review on the knowledge of AMTSL for preventing PPH is in Table 3.2.

In the context of this review, the definition of knowledge is 'awareness, understanding, or information that has been obtained by experience or study, and that is either in a person's mind or possessed by a people generally' (https://dictionary.cambridge.org>dictionary.or>dictionary.org>dictionary>knowled). As outlined in Table 3.2, most Nigerian studies reflect a high level of knowledge regarding preventing PPH, ranging from 57.8% to 90.6%. For example, Bulndi *et al.* (2017), Onasoga Awhanaa and Amiegheme (2012), and Oladapo *et al.* (2009) in their studies report that participants exhibit a very high knowledge level of the prevention of PPH and indicate the high practice of AMTSL. Bulndi *et al.'s* (2017) study among different healthcare professionals (nurses, midwives, nurse-midwives, community health extension workers (CHEWs), and junior community health extension workers (JCHEW) reveals that 80% of the nurse-midwives (dual qualified) exhibited a high level of knowledge and management skills of PPH. Oladapo *et al.* (2009) report that obstetric specialists exhibit higher knowledge than nurse-midwives about AMTSL according to FIGO/ICM guidelines because they constantly update their knowledge. Other studies reviewed from Nigeria have also strongly linked the high knowledge level to regular upgrading by attending seminars, workshops, in-service training, professional qualification, and years of working experience in maternity units (Bulndi *et al.* 2017, Onasoga, Awhanaa and Amiegheme, 2012).

Studies from other resource-limited countries also report participants' high levels of knowledge regarding AMTSL for preventing PPH – studies from Ethiopia by Wake and Wogie (2020), and from Ghana by Hammah and Donkor (2013). Overall, studies from Tanzania Angelina, Kibusi and Mwampagatwa (2019) and Carnahan *et al.* (2016) reflect lower levels (6.1% to 44%), except the study by Ramadhani, Liu and Lembuka (2020), which is a 100%. The possible reason for the low knowledge level is that they are district hospitals, and likely the staff is less qualified. Furthermore, studies from Sierra Leone by Natarajan *et al*. (2016), Ethiopia by Wake and Wogie (2020), Tanzania by Ramadhani, Liu and Lembuka (2020), and Kenya by Muthoni, Kabue and Ambani (2021) also report similar links of high knowledge level to regular upgrading by attending seminars, workshops, and in-service training, professional qualification and years of working experience in the maternity unit. In addition, Muthoni, Kabue and Ambani's (2021) study indicates a link between having a high knowledge level of prevention of PPH with socio-demographic characteristics (age, professional qualification). In addition, a study from Uganda by Braddick *et al.* (2016) reveals that participants also update their knowledge of AMTSL through the informal sharing of knowledge and experience.

However, the high knowledge level indicated in the study findings has only sometimes corresponded with the accurate practice of PPH prevention measures. Studies from Nigeria report that the observation of participants during the delivery process revealed that only a few of them could practice all AMTSL components (Asibong, Akpan and Ayi, 2018, Oyetude and Nkwonta, 2015, Oladapo *et al.*, 2009). For example, Oyetude and Nkwonta's (2015) study among midwives (n=177) in Primary Healthcare Centres in Anambra State, Nigeria, reveals that out of 78% who indicate practicing AMTSL, just 41% adequately practice AMTSL. However, Bimbashi *et al.* (2010) study in a large maternity hospital in Tirana, Albania, revealed that 78% of obstetricians regularly used AMTSL. Although a significant proportion of the obstetricians reported using AMTSL, the sample size was small (n=27), thus suggesting caution in applying the finding.

Other studies from Kenya, by Muthoni, Kabue and Mbani (2021), and Tanzania, by Ramadhani, Liu and Lembuka (2020), report poor practice of AMTSL for the prevention of PPH. Ramadhani, Liu and Lembuka report that participants display very high knowledge of AMTSL (100%), but less than half (47.88%) demonstrate correct use of AMTSL. The findings suggest remarkable variation between participants who indicate having knowledge and the

actual practice of AMTSL and non-adherence to recommended guidelines. Studies by Braddick *et al.* (2016) and Felarmine, Joachim and Agina (2016) reveal that a higher proportion of professionals practice AMTSL in facilities where supplies such as oxytocin and syringes are readily accessible in the labour ward. A study by Oyetude and Nkwonta (2015) from Nigeria reports that most midwives conform more to practicing just a single component of AMTSL, such as the administration of oxytocin. Studies from Uganda by Braddick *et al.* (2016) and Tanzania by Ramadhani, Liu and Lembuka (2020) report similar findings.
Another finding is that guidelines/protocols either need to be updated or are not available in some facilities in Nigeria. For example, Bulndi *et al.* (2017) study, reveal that 60% of the health facilities had no PPH protocol to prevent PPH. Although the reviewed literature referred to use of PPH guidelines, all the guidelines especially in the Nigerian studies need updating.

Regarding the non-adherence to the recommended PPH guideline, studies by Braddick *et al.* (2016) and Carnahan *et al.* (2016) report that participants recognize their incompetence in practicing AMTS, request to upgrade their knowledge in the measure that will help them to prevent PPH. However, a current study from Madagascar by Flanagan *et al.* (2021) notes that to address the issue of the participants' fundamental belief of the incidence of PPH is to upgrade their knowledge and tackle behavioural barriers. In addition, the researchers report that because the prevalence of PPH is almost non-existent in some facilities, adhering to AMTSL guidelines is not of concern to the participants. Similarly, studies by Braddick *et al.* (2016), Carnahan *et al.* (2016), Natarajan *et al.* (2016) and Schack *et al.* (2014) report that participants do not adhere to PPH guidelines as they see no need to administer oxytocin when a woman undergoes normal labour and have no risk for PPH. Not administering uterotonic medication may be risky because PPH could occur suddenly. Evidence shows that women without known PPH risk factors develop PPH (Ngwenya, 2016). Furthermore, Schack *et al.* (2014) study revealed that the participants (midwives) believed that bleeding during labour is the woman's fate. Midwives with such a stance reflect the influence of their cultural views about death and illness. Ethically, the woman's well-being is supposed to supersede a healthcare professional's belief.

The review studies in this section reveal that most participants have more knowledge about AMTSL than the actual practice of AMTSL. However, the participants were passive in the research; they did not participate in the research process. While such studies offer much pertinent advice for healthcare professionals, the lack of involving them in the research in the

prevention of PPH leaves a gap. The subsequent section will address the challenges involved in the prevention of PPH.

Challenges to preventing Postpartum Haemorrhage (PPH)

This section focuses on the challenges identified from the research regarding the prevention of PPH through the practice of AMTSL and the utilization of uterotonic medication and how these challenges impact the provision of maternal health services in Nigeria. This section is under two subheadings – lack of supplies and infrastructure and shortage of skilled healthcare professionals.

(i) Supplies and infrastructure

One challenge that cuts across the reviewed studies is maintaining the cold chain storage of injectable uterotonic medications in an ambient environment like Nigeria. Injectable uterotonics such as oxytocin and ergometrine require special storage of 2^{o}C– 8^{o}C to maintain their potency (WHO, 2018), so they require refrigeration. However, the refrigeration of the uterotonics constitutes a significant challenge in resource-limited countries like Nigeria, where the electricity supply is inadequate and constantly interrupted and non-existent in some areas (Ejekam *et al.,* 2021, Akter *et al.*, 2021, Ejekam *et al.,* 2019). For example, Anyakora *et al.* (2018) evaluated the quality of oxytocin injection, misoprostol, and other non-uterotonic injections used in Nigeria. Anyakora *et al.* findings reveal that the storage temperature for oxytocin in the Northeast zone was 30^{o}C, and 74.2% of the oxytocin samples and 33% of misoprostol samples failed the test. One of the samples even showed an absence of any effective agent.

Furthermore, studies from Nigeria by Ezeama *et al*. (2014) and Uthman *et al*. (2011) (in the previous section) linked the less effectiveness of oxytocin to both the warm atmospheric temperature of the setting and the unstable situation of electrical supply affecting the functioning of the refrigerator. Studies from other resource-limited countries such as Uganda, by Onoge *et al.* (2016), Braddick *et al.* (2016) and from Tanzania, by Carnahan *et al.* (2016) reveal similar findings.

The unawareness or more simply put lack of knowledge about how to store oxytocin further compounds the challenge. A study in Nigeria by Ejekam *et al.* (2019) reveals that only 52% of

the participants were aware of storing oxytocin within 2ºC to 8ºC. In contrast, the current study by Ejekam *et al.* (2021) reveals that just 46% of the participants exhibit correct knowledge of oxytocin storage in the refrigerator. In addition, Ezeama *et al.* (2014) reveal the storage of uterotonic medications that need refrigeration at room temperature in pharmacies that sell them. A study from Sierra Leone by Natarajan *et al*. (2016) reports similar findings. These findings have significant implications for Nigeria, where PPH is a major cause of maternal mortality. It is of concern that midwives and obstetricians who are the primary providers of maternal healthcare services lack knowledge of the storage temperature of oxytocin, the main medication for preventing PPH, especially in Nigeria, where PPH is one of the significant contributors to maternal morbidity and mortality. The indicated challenges impact the effective utilization of injectable uterotonic medications in Nigeria.

Another main challenge that impedes the practice of AMTSL is the lack of uterotonic medication and equipment in healthcare facilities, as indicated in studies from Nigeria and other resource-limited countries (Kalu and Chukwurah, 2022, Asibong, Akpan and Ayi, 2018, Braddick *et al.,* 2016, Carnahan *et al.,* 2016, Oyetunde and Nkwonta, 2015, Schack *et al.,* 2014, Hammah, and Donkor, 2013). Further challenges in practicing AMTSL identified in the literature is the need for more in-service training and workshops on AMTSL (Kalu and Chukwurah, 2022, Asibong, Akpan and Ayi, 2018, Hammah and Donkor, 2013).

(ii) Shortage of skilled birth professionals

Another major challenge that impacts the prevention of PPH in Nigeria is the shortage of skilled healthcare professionals (Kalu and Chukwurah, 2022, Aluko *et al.,* 2019, Asibong, Akpan and Ayi, 2018, Oyetude and Nkwonta, 2015). For example, a mixed-methods study by Aluko *et al.* (2019) aimed at investigating the staffing situation and recruitment of staff in primary health maternity centres in five local government areas in Southwest Nigeria revealed that the proportion of nurse-midwives is just 26%, which is below minimal to meet the demand of client care. The staff shortage could increase the workload for the available healthcare professionals, which may result in burnout and the provision of substandard care. Similarly, a qualitative study conducted by Akter *et al.* (2021) among healthcare providers in Kenya, Nigeria, and South Africa on the detection and management of PPH reported a shortage of staff, which interfered with the effective monitoring of women during labour and the postpartum periods in the hospitals across the three countries. Furthermore, Studies from Uganda, by Braddick *et*

al. (2016) and Ghana, by Schack *et al.* (2014) reported that participants did not practice AMTSL according to the guidelines because they were alone and under pressure with the heavy workload. Also, studies from Nigeria by Asibong, Akpan and Ayi (2018) and Oyetunde and Nkwonta (2015) note that a shortage of skilled healthcare professionals prevents healthcare professionals from effectively practicing AMTSL. Similar findings were found in studies from Uganda by Braddick *et al.* (2016), Sierra Leone, Natarajan *et al*. (2016), and Ghana by Schack *et al.* (2014).

The studies suggest the lack of supplies and staff interfered with healthcare professionals (midwives and obstetricians) to practice AMTSL and effectively manage women during the labour, and the postpartum period.

Summary

This chapter reviewed the literature pertaining specifically to the prevention of postpartum haemorrhage. Much of the evidence reviewed, reported uterine atony and retained placenta as the leading obstetric causes of PPH and different risk factors. Evidence also reports various uterotonic medications used to manage PPH, but PPH continued to be a significant obstetric cause of maternal morbidity and mortality in Nigeria. Furthermore, the reviewed evidence reports that a lack of equipment and staff impacts healthcare professionals' effective management of PPH.

This current study aims to work with midwives and obstetricians exploring with them how their knowledge and experience can contribute to preventing PPH in a Nigerian setting. The next chapter presents the chosen method and design of the study, with a rationale for selecting Action Research as the most appropriate methodology to answer the research question and address the aims and objectives of this study.

CHAPTER FOUR

METHODOLOGY

Introduction

This chapter presents the philosophical and theoretical perspectives and methodology designed and adopted for this research project. As presented in chapter one, the research question is: *How can Midwives and Obstetrician contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?* This chapter begins with a reintroduction to the research aim, objectives and research question. The chapter is then presented in two sections: in section one a brief introduction to the philosophical and theoretical perspectives and methodology frameworks that embrace the inclusivity of midwives and obstetricians guided the exploration of this question. In section two the focus of the discussion is on the qualitative methodologies that are relevant and why Action Research (AR) is the most appropriate methodology for this study. This chapter ends with a summary.

Research Aim

To work together with midwives and obstetricians to identify steps and actions needed including existing barriers to reduce Postpartum Haemorrhage.

Research Question

How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

Research Objectives

(1) To collaborate with the midwives and obstetricians to identify preventive measures and develop innovative knowledge on prevention of PPH.

(2) To create knowledge and awareness with midwives and obstetricians to prevent PPH.

(3) To collectively take action from the research to inform the utility of the current WHO (2018) guidelines for the prevention of PPH.

Section One

Philosophical and theoretical perspectives

Philosophy underpins how data about a phenomenon should be gathered and analysed, and a researcher's philosophy and beliefs impact research (Clark *et al*., 2021). Examples of such philosophical assumptions and beliefs are *ontology* and *epistemology* (Clark *et al*., 2021, Berryman, 2019, Creswell and Poth, 2018). Ontology is the study of concepts such as existence, being, truth, and reality and addresses questions like 'What is the nature of reality?' 'What is reality?'. On the other hand, epistemology is the study of knowledge and addresses questions like, 'What is knowledge?', 'How is knowledge acquired or produced?' and 'How do we know what we know?' Two major research philosophies have emerged from the two branches of philosophy in the Western scientific tradition: positivist and interpretivism/constructivism paradigm/worldview (Schwandt, 2003).

The positivists ontological perspective proposes that there is one universal reality, independent of people that can be observed and described from an objective viewpoint (Clark *et al*., 2021, Nilsen, 2008). Positivists-position sets out that the researcher is separate from the researched and as such a researcher would create a distance relationship. On the other hand, interpretivists ontological perspective is that belief in multiple truths or reality and in the subjective interpretation of reality through which that reality can be fully understood (Clark *et al*., 2021, Berryman, 2019). These beliefs determine that if researchers see themselves and the participants as separate from reality and the world, it will affect how they produce knowledge equally. As Berryman (2019) indicates ontology and epistemology are linked and indicate a researcher's beliefs regarding the nature of reality, the world, and the way of being in the study; they both portray the worldview. Although, the interpretivism/constructivism paradigm uphold ontological beliefs of multiple reality, this study resonates more with the participative paradigm/worldview and underpins the conduct of this study. Heron (1996, p. 10) refers to the participative paradigm/worldview as a unique '*fifth inquiry paradigm*' that upholds participative reality which is '*subjective-objective*'. The researcher participates with what exists/reality and accordingly constructs it in his/her own terms reality. Consequently, a participative worldview asserts an epistemology in which the knower (the researcher) relates with the known, an inseparable relationship. Also, the worldview advocates participatory principles of epistemic and political participation (Heron and Reason, 1997, Heron, 1996). These principles emphasise participative relationship in which the participants and researcher

explore together as co-researchers and co-participants in generation and implementation of the new knowledge into the practice environment.

Section Two

The literature in the background chapter 2 and the empirical literature and evidence from Nigeria reviewed in chapter 3 reveal that PPH is a major problem that causes maternal morbidity and mortality which remains a significant problem. Most research studies focus on evaluating drugs for the prevention and treatment of PPH, on practitioners' knowledge of preventing PPH, the experience of preventing PPH, and on myriad contributing factors. There is a significant lack of research that engages proactively with midwives and obstetricians, seeking their expertise and knowledge and adding this knowledge to discussions aimed at preventing PPH in Nigeria. This is questionable when there is the acknowledgment that midwives and obstetricians are the foremost practitioners providing maternal healthcare services to pregnant women during pregnancy, labour, and postpartum periods and ensuring the prevention of PPH (Oladapo *et al*., 2009). The contribution of both healthcare professional groups to discussions to reduce the occurrence of PPH is core to addressing the research question. A qualitative methodology that supports the active participation of midwives and obstetricians was sought to execute this research study.

Qualitative Methodologies

There are varied choices of qualitative methodologies for conducting research. Rieger (2018) suggests that the choice of a methodology should depend on the suitability of the philosophical underpinning and specific characteristics of the research question. Considering Rieger's suggestion, a discussion on various qualitative research methodologies is in the subsequent paragraphs, with the intention of selecting a suitable study design for this thesis. Examples of discussion of six qualitative methodologies are in the following section, namely, - narrative, case study, phenomenology, ethnography, grounded theory, and action research (Gerring, 2017, Riessman, 2008, Patton, 2002, O'Leary, 2007, Stake, 2000). The researcher presents a review of these methodologies for their applicability to this study's research question, aims and objectives outlined previously in the Chapter.

Narrative research methodology: Narrative research is a method in which the researcher examines the lived experience of individuals detailed stories which are context and time bound

and may involve only one individual but maximum of a few individuals (Creswell and Creswell, 2018, Clandinin, Cave and Berendonk, 2017, Creswell, 2013). The narrative design with a focus on a single or few individuals' lived stories may not be the best choice of a methodology for this study. The reliance of the narrative approach on a limited number of personal experiences of PPH which may not always be accurate and may be challenging to verify and/or clarify, may lead to difficulties with achieving this study objectives. The important concerns of this study, regarding the prevention of PPH, may not be adequately addressed without an opportunity to explore the experiences of both Midwives and Obstetricians together with this researcher.

Case Study Research Methodology: Creswell and Creswell (2018), Creswell and Poth (2018), and Gerring (2017) describe the case study research design as an extensive study of an individual case, or small number of cases, or an event within a 'real life' setting. Case study design was originally employed in various disciplines like anthropology, history, psychology, and sociology, medicine (Creswell and Poth, 2018, Harrison *et al.* 2017). Although the use of case study design provides in-depth understanding of the case being studied, this study requires a methodology that would actively involve participants (midwives and obstetricians) in the whole research process of preventing PPH in Nigeria.

Phenomenology Research Methodology: Phenomenology describes the meaning people ascribe to their lived experiences of an issue, incidence or event (Creswell and Poth 2018; Spencer, Pryce and Walsh, 2014). The focus of researchers using phenomenological study designs is to describe the common meaning among participants who experience the similar phenomenon. The task of the researchers therefore is to ensure the exploration of participants' experiences unveils the meaning they give to the study phenomenon (Spencer, Pryce and Walsh, 2014). In this design the focus is on the meaning of the experience which connotes a more psychological reflection. While this is an important aspect of an experience, this is not the primary focus of understanding the experiences of midwives and obstetricians in preventing PPH and addressing the aims of this research. A methodology which is much more practical to explore the day-to-day experiences and improve practice is required for this research.

Ethnographic Research Methodology: According to Creswell and Poth, (2018) and Patton, (2002), ethnographic research has its roots in anthropology, the concept of culture is

fundamental, and cultural theories guide the research process when conducting research. Ethnographic study is committed to describing peoples' ways of life, the impact of cultural beliefs, societal norms have on the group (Creswell and Creswell, 2018, Creswell and Poth, 2018, Creswell, 2013, Patton, 2002). While the impact of cultural beliefs and values on the experiences of obstetricians and midwives about prevention of PPH could be explored as a factor to be considered, it is not the primary focus of this study and for that reason, ethnographic research design is not the design of choice for this study.

Grounded Theory Methodology: Grounded theory methodology originates from sociology, developed by Glaser and Strauss (1967). The main thrust of GT is to generate a theory grounded in data through a systematic data collection and analysis process (Glaser and Strauss, 1967). According to Charmaz (2014) constructivist grounded theory approach '… sees both data and analysis as created from shared experiences and relationships with participants' (p. 239). Charmaz (2014) considers the researcher and participants co-constructors; however, she states, 'The theory depends on the researcher's view …' (p. 239). The grounded theory approach was considered as a suitable methodology for this study. It was, however, not chosen because the participants typically do not participate in the research processes and implement research outcomes (Dick, 2016). A core objective of this research is to involve midwives and obstetricians in the discussion for the prevention of PPH, and to examine the current PPH guidelines available to support them in their practice therefore the grounded theory approach was not selected.

Given that the five previous methodologies were not the 'best fit' to achieve the research aims of this study, Action Research was also considered and deemed the most suitable methodology to position the research question and achieve the aims of this study. The following section discusses action research and the rationale for the choice of methodology.

Action Research (AR) Methodology

Kurt Lewin, a social psychologist, research work is associated with AR origin in the early 1940s, especially with originating the term action research and pioneering action research as a methodology (Bogacz-Wojtanowska *et al.*, 2022, Koshy, Koshy and Waterman, 2011). The start of action research as Bogacz-Wojtanowska *et al.* (2022, p. 56) citing Kurt Lewin (Lewin, 1946, p. 26) indicate came from Kurt Lewin's opposition to counter 'Taylor's concept,

expressed in *Theory of Scientific Management,* as well as to the dominant positivist trend of practicing science that is based on neutrality, reducing bias…' Therefore, as an alternative, Kurt promoted 'a participatory and knowledge-generating approach to creating effective practices based on a constant process of social planning, taking action, and evaluation of undertaken activities' (Bogacz-Wojtanowska *et al.*, 2022, p. 56). In the same vein, Bradbury (2015) describes AR as a democratic and participative orientation that leads to the formation of knowledge. So, the aim of AR is to solve real-world problems and produce new knowledge (Casey *et al.* 2021a), thus signifying/implying the dynamic nature of action research (Casey *et al.* 2023). Action research achieving these dual aims simultaneously are the characteristics that distinguishes it from conventional research that solely aims to produce/create knowledge (Casey, O'Leary and Coghlan, 2018). Furthermore, the authors add that an epistemological assumption in AR is the idea that research should go beyond describing, understanding and explaining the world it investigates, to include change (Casey, O'Leary and Coghlan, 2018). The following section is the discussion on the rationale for choosing AR for this study.

Rationale for AR

The rationale for choosing AR is that researchers work collaboratively with participants who have the unique insight and experience of the problem needed to generate new knowledge to resolve it (McDonnell and McNiff, 2016, Herr and Anderson, 2015). Furthermore, AR is suitable because it can be used to work with multidisciplinary groups (such as the midwives and obstetricians in this current research) (Koshy, Koshy and Waterman, 2011) to research on pertinent issues. For example, Madden *et al.* (2018) AR study was conducted with a multidisciplinary group who are midwives and a mental health nurse to develop midwives' skills. Also, Casey *et al.* (2021b) and Koshy, Koshy and Waterman (2011), point out that AR can be used to identify problems in healthcare and achieve solutions for the improvement of practice. For example, research findings reveal the effective usage of AR methodology in healthcare issues in Nigeria, (Arije *et al.*, 2023, Eze *et al.*, 2023, Akwataghibe *et al.*, 2021, Esienumoh, Allotey and Waterman., 2018, Esienumoh, Mboho and Ndiok, 2016); and other African countries, including Senegal, Tanzania, and Uganda (Fortin *et al.*, 2022, Maluka *et al.*, 2020, Ekirapa-Kiracho *et al.*, 2016). Although, the studies from Nigeria and other African countries were not conducted with healthcare professionals and on issues related to PPH, but studies from Ireland, Australia were with healthcare professionals, on midwives professional and personal understanding of burnout; the development of midwives' skills to support

pregnant women with mental health needs, and the development of maternity model of care, respectively (Doherty and O'Brien 2022, Madden *et al*., 2018, Donnolley *et al.* 2016) though not related to PPH.

In addition, the important strength of AR is its dual goals of generating solutions to practical problems through a collaborative relationship between the researcher and participants and subsequently creating new knowledge (Bogacz-Wojtanowska *et al.,* 2022, Casey *et al*., 2021b). For example, the studies by Eze *et al*. (2023) and Donnolley *et al.* (2016) demonstrate the dual goals benefit of action research. AR is the most appropriate methodology for this current research study based on the evidence mentioned earlier. The use of AR for this study allows the researcher to work collaboratively with the midwives and obstetricians on how to contribute to preventing PPH in the setting. The following sections present a discussion of various AR approaches.

Approaches of Action Research

AR Action research has evolved since its foundation with different viewpoints and approaches in various disciplines (Herr and Anderson, 2015, O'Leary, 2007). Such approaches include action science, appreciative inquiry, and cooperative inquiry (O'Leary, 2007, Heron, 1996). Although the AR approaches are different, it is a family of related approaches as Coghlan (2019) and Casey, O'Leary and Coghlan (2018) described it. As the literature in Chapter 3 highlights, the absence of midwives and obstetricians actively involved in ways of the prevention of PPH in Nigeria is a significant gap in research. Therefore, to address this gap, this study uses an AR approach in which the participants were extensively involved in the planning, designing, and operationalising of this research. Herr and Anderson (2015) advise that a researcher needs to choose the most suitable approach for the study context. The subsequent paragraphs present different approaches to AR.

Action Science

Action science origin is mainly linked to Chris Argyris, Robert Putnam, and Diana Smith, with the primary aim of organizational learning (Herr, and Anderson, 2015). Action science is an approach to AR, and it integrates practical problem-solving with theory building and change (Herr and Anderson, 2015, Friedman, 2001). Herr and Anderson (2015, p. 15) citing Argyris

et al. (1985 p. x) state that 'The goal of action science is the generation of "knowledge that is useful, valid, descriptive of the world, and informative of how we might change it."

Appreciative Inquiry (AI)

Appreciative Inquiry grew out of the works of Cooperrider, and the focus was organizational development (Coghlan, 2019, Reed, 2011). '… research into organizational life' (Heron, 1996, p. 8).' AI occurs mainly around the processes that result in organizational change, and the AI practitioner is usually the facilitator or consultant (Coghlan, 2019, Reed, 2011).

Cooperative Inquiry (CI)

Cooperative inquiry is an AR approach to research that John Heron first put forward in 1997 that was subsequently developed by Peter Reason (Heron, 1996). CI is a form of research that usually comprises a group of people researching a common topic of interest through their own experience to develop new understandings and innovative ways to bring about change and improve practice (Heron, 1996, Reason, and McArdle, 2004). According to Heron and Reason (2008, p. 366), CI is 'a form of second-person action research in which all participants work together in an inquiry group as co-researchers and as co-subjects' Later in this chapter a brief discussion about the second-person is presented as one of the three inquiry strategies. Heron and Reason's description of CI indicates one of its key characteristics, the conduct of research in which there is a mutual relationship between the researcher and participants, a collaborating relationship. CI maintains from the onset that all those in the inquiry are coresearchers as well as coparticipants.

This characteristic of an inquiry group members being peers distinguishes CI from conventional research (quantitative and qualitative research) in which the researcher does not usually assume the role of participant, nor participants become involved as researchers in the inquiry process. CI advocates research conducted *with* people rather than *on* or *about* people (Heron, 1996). The inquiry group does research with each other. CI's idea of conducting research with people is because it acknowledges that participants can contribute their views and be involved in solving matters that pertain to them. CI involving research participants is of primary consideration as its use can address the aims of this research study, which seeks to explore the involvement of midwives' and obstetricians ' contribution in the prevention of PPH in the maternity unit (Nigeria). Thus, in CI, all those in the inquiry participate in designing and

organising it, exploring the issue of inquiry and making the decision, and taking action together as a group.

The Three Strategies of Inquiry -First-person, Second person and Third-person

First-person research is about the capability of a person inquiring into his or her own life, which helps the person to be alert to what is happening within him or her and the effect of the world. It has to do with self-learning (Coghlan and Shani, 2017, Coghlan and Brannick, 2014, Reason and McArdle, 2004).

Second-person research is the capability of researchers to inquiry face-to-face with people on a topic of mutual interest in a collaborative and democratic way (Coghlan and Shani, 2017, Coghlan and Brannick, 2014, Reason and McArdle, 2004). Heron (1996) extensive work on cooperative inquiry, research into human condition, is an example of second-person research.

Third-person research does not involve face-to-face inquiry. It has to do with dissemination of research findings to the wider communities, which is through mediums such as networks, publishing, and conference designs (Coghlan and Shani, 2017, Coghlan and Brannick, 2014, Reason and McArdle, 2004). According to Reason and McArdle (2004) these three strategies of inquiry are interdependent, and action research needs to promote link among the levels.

Participation in Cooperative Inquiry

Epistemic and Political Participation

CI is a participative research approach that is underpinned by the participative worldview (already indicated in section one). Central to the philosophy of CI is the idea of participation. Yorks (2015), Heron (1996) and Heron and Reason (1997) acknowledge two types of complementary participation in CI: *epistemic* and *political* participation. Epistemic participation is the relationship between the knower (researcher) and the known (the researched). Epistemic participation in CI implies that propositional knowledge, that is the outcome of research, is grounded in the researchers' experiential knowledge (experience) (Yorks, 2015, Heron, 1996, Heron, and Research, 1997). The co-researchers (all the participants) in this study, shared their subjective clinical experiences, from which they noted similarities and differences, reviewed and planned for new actions on how to prevent PPH. Participative knowing and collaboration roles of co-researchers and co-participants in CI, link

the researcher and participants together in an inquiry, in contrast to the split that exists with conventional research (Heron and Reason, 1997, Reason, 1998, Reason, 1999). In this current study, the researcher worked with the midwives and obstetricians as a group in meetings to reflect, review and plan the actions together.

While political participation is about participants' engagement in the inquiry on decision about them. With political participation, participants participation in the inquiry is voluntary (Yorks, 2015). The idea of voluntary participation is in line with the ethical principle of respect for persons (as in the ethical consideration later in this chapter). In CI each member of an inquiry has the right to participate in every phase of the research process, from the design and management of the inquiry, to engaging with the experience and action that is being explored. Also, all the members become involved and participate in interpreting and drawing conclusions and taking the initiative and exerting influence on the process (Yorks 2015, Heron, 1996, Heron and Reason, 2008).

Thus, epistemic and political participation in CI imply that researchers are also participants (co-participants), and participants are equally researchers (co-researchers) (Heron and Reason 1997, Heron 1996).

Furthermore, CI group members work together as co-researchers through cycles of action and reflection; they engage in an extended epistemology of experiential, presentational, propositional and practical ways of knowing (Heron and Reason, 2008) (see Figure 4.1). Heron and Reason (2008) and Reason (2002) describe the four forms of knowing as follows: *Experiential knowing* is knowing that occurs through direct face-to-face encounters with a person, place, or thing; *Presentational knowing* develops from experiential knowing and expressed through imagery of movement, dance, drawing, painting, visual arts, sculpture, poetry, story; *propositional knowing* or conceptual knowing is intellectual knowing of ideas and theories; and *practical knowing* accomplishes the other forms of knowing, is knowing how to carry out a skill. Knowledge from CI is considered more valid if these four ways of knowing harmonize with each other (Heron and Reason, 2008). According to Heron (1996) CI cycle consists of four stages to complete a cycle, it moves from reflection to action and back to reflection again (there is further discussion about the stages in chapter 5). This research adopted CI as the framework for this study. The rationale for this choice was that the CI framework can

facilitate in-depth engagement and collaborate with the midwives and obstetricians, a multidisciplinary group with common interest in the prevention of PPH to generate pertinent data to solve the problem, instead of being 'distant *outsider* researcher'. According to Herr and Anderson (2015), the term outsider refers to a researcher who collaborates to varying degree with practitioners working within an organisation as *'insiders'*. There is further discussion on outsider and insider at the end of this section. For example, (as already indicated in this section) Madden *et al*. (2018) employed CI to research with a multidisciplinary group.

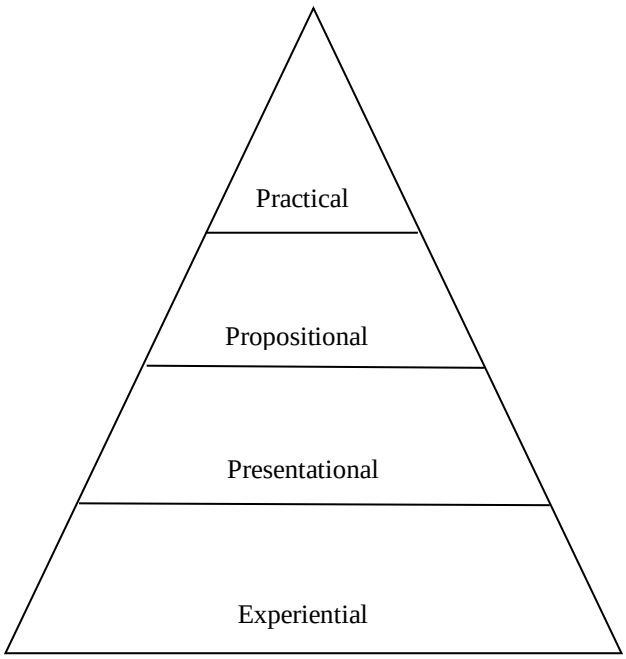

Figure 4.1 The pyramid of fourfold of knowing (Heron, 1996, p. 53)

Positionality – Action Researcher

According to Kitagawa (2023), Wilson and Janes (2022), Holmes (2020), and Herr and Anderson (2015) positionality is a researcher's position in a research study and how participants perceive them. An existing assumption is that researchers are often outsiders, and the concern is the extent to which they involve the insiders (outsiders and insiders already described in this section). Positionality is a complex notion. Herr and Anderson (2015) state that the major concern about positionality for action researchers, is how they relate with their setting and participants, as the researcher(s) may be either an outsider seeking a collaborative relationship, or insider with regard to the setting. Wilson and Janes (2022) caution against the notions of outsider and insider issue, as these are two ends of a positionality continuum in which researchers move in the course of a study. Herr and Anderson (2015) pointed out that participatory action researchers who are outsiders claim that their relationship to participants shift at different section of the study. This researcher though a midwife who have insider knowledge of obstetrics, is an outsider researcher as she does not work in the hospital where the research was conducted.

Summary

This chapter has presented action research as the chosen methodology, adopting a cooperative inquiry approach to best answer the research question and effectively and successfully achieve the aims and objectives of this study. The participative philosophical and theoretical underpinnings of action research guided the exploration of this study. In particular, the design was selected owing to its collaborative action orientated approach. Collaboration and 'giving voice' are key to this study, and this was achieved through a cooperative inquiry process. The following chapter outlines in more detail the cooperative inquiry method adopted.

CHAPTER FIVE

THE STUDY METHOD

Introduction

This chapter presents the data collection methods, the approach to data analysis undertaken to answer the research question and address the research objectives. It begins with a presentation of the aim of the study, the research question and the objectives. This is followed by a description of study setting, the study population and sample, the recruitment methods and sample size, inclusion and exclusion criteria, discussion on ethical consideration related to this study, the method of data collection, cyclical nature of cooperative inquiry, the data analysis for this study, reflexivity, and ends with a summary.

Research Aim

To work together with midwives and obstetricians to identify steps and actions needed including existing barriers to reduce Postpartum Haemorrhage.

Research Question

How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

Research Objectives

(1) To collaborate with the midwives and obstetricians to identify preventive measures and develop innovative knowledge on prevention of PPH.

(2) To create knowledge and awareness with midwives and obstetricians to prevent PPH.

(3) To collectively take action from research to inform the utility of the current WHO (2018) guidelines for the prevention of PPH.

Study Setting

As the study aimed to contribute to the prevention of PPH from the perspective of midwives and obstetricians, a secondary level referral hospital in Nigeria was selected as the study location.

The hospital has a total staffing of 372 and a bed capacity of 251, however, 119 of the staff (n=80 midwives and n=39 doctors/obstetricians) work in the maternity unit of the hospital. The hospital offers services, with easy access to a large proportion of both urban and rural population in its environs. For this study, the hospital has the advantage of being an obstetric clinical placement hospital for midwifery and medical students. The hospital has a maternity unit that provides antenatal, intrapartum and postnatal care.

Population and Sample

The study population consists of midwives' (those registered and licenced as midwife and as nurses/midwives) and obstetricians (licenced medical doctors/obstetricians) in the second-tier referral hospital. The rationale for selecting this study population is that they are 'front line' clinicians providing care during normal childbirth and the postpartum period (24 hours following childbirth and up to 6 weeks). In addition, they are skilled in the prevention of PPH, and are available to provide specialised care during indicated time periods when PPH mainly occurs (WHO, 2012b, FIGO, 2012). There are a total of one hundred and nineteen (119) eligible participants working in the maternity unit.

Recruitment and Sample Size

The participants are midwives and obstetricians who are currently practising in the research site/hospital in Nigeria. The researcher employed a purposeful sampling technique employed to select the participants. Purposeful sampling or purposive sampling is a form of non-probability sampling in which participants who are selected have awareness and a deep understanding of the phenomenon (Clark *et al.*, 2021, Patton, 2002). Following the cooperative inquiry framework that the researcher adopts for this study, a sample size for a standard/average cooperative inquiry group ranges from 2 – 20 participants (Reason and McArdle, 2004). The researcher is a participant, following the tenet of cooperative inquiry that everyone is involved in the inquiry, and simultaneously assume the roles of co-researcher and co-participant during the inquiry process. Thus, a sample size of 8 participants (n=4 midwives, n=4 obstetricians) including the researcher, bringing the total number to 9 for the cooperative inquiry group.

Inclusion criteria

The inclusion criteria for this current study are midwives that are registered and licenced by the Nursing and Midwifery Council of Nigeria (NMCN) and obstetricians registered and licenced by the Medical and Dental Council of Nigeria (MDCN), who had at least three months working experience in the maternity unit. Also, midwives and obstetricians who provide primary or supportive care during childbirth and postpartum period. They are the professionals, skilled birth attendants whose role it is to manage normal deliveries and to prevent PPH (Oladapo *et al*., 2009), which is in line with the aim of this study.

Exclusion criteria

Healthcare professionals who are registered nurses, and doctors who are not obstetricians, community health officers, community extension healthcare workers, are excluded. Also, student nurses, midwives' students and medical students are excluded from this study, as they may not have the experience of preventing PPH.

Ethical Consideration

Research especially that with human participants involves risks, and as such researchers have the ethical obligation to protect, respect the rights and values of participants (Creswell and Creswell, 2018, Silverman, 2017). The ethical obligation and principles are discussed further under the Belmont Report and were adhered to in this study as they are equally reflected in the Nigerian Code of Health Research Ethics (the country where this study was conducted). The Nigerian Code recommends that researchers adhere to ethical principles of safeguarding and protecting participants, minimizing risks and have consent from participants to conduct research www.nhrec.net>nhrec>NCHRE_Aug07 The Belmont Report consists of three basic ethical principles to guide research with human participants – *Respect for persons*; *Beneficence*; and *Justice* (www.hhs.gov/ohrp/humansubjects/guidance/belmont.htm).

Respect for Persons

The first ethical principle, *Respect for Persons,* is the recognition of research participants' dignity and autonomy and protecting the vulnerable with less autonomy. The dignity and autonomy of the midwives and obstetricians (participants) were of priority in this research. As indicated in this section, advertisement posters with information about this research were available on the hospital premises for voluntary participation (see Appendix 4). At the start of

every meeting, the researcher/I asked the participants if they still consent to continue with the research and they all said yes.

Information leaflet

The researcher developed a comprehensive information leaflet with adequate information to ensure that ethical principles were upheld (see Appendix 5). The researcher sent the information leaflets three days before the commencement of the research through one of the senior staff to each participant for them to read and understand in order to make an informed decision.

Consent form

Each of the participants who volunteered and participated in the CI meeting signed an informed consent form before the audio recordings of the meetings (see Appendix 6), also, the researcher sought permission verbally, before the audio recordings.

In keeping with the ethos of AR, participants' participation was sought at every stage of this research process. Also, as indicated on the information leaflet the participants were informed that they can refuse to participate and can withdraw from the research at any stage during the meeting and before all the data was fully analysed.

Beneficence

The second ethical principle, *Beneficence,* stipulates that the researcher has the obligation to protect research participants from harm through maximising research benefits and minimising harm. The participants were informed that there is no potential harm or risk research in participating, and no direct individual benefits. However, the research also emphasised that the research which they were participating in would provide strategies for preventing postpartum haemorrhage, which will support midwives and obstetricians to enhance the provision of their care to mothers and improve their well-being. Although no harm or risk was anticipated, counselling services that were there in the hospital were made available. During the research, no participant felt the need to contact the counselling services. In addition, the participants were assured that anyone could decline at any point to continue with the group research.

Confidentiality consent form

To safeguard and protect the participants' welfare during the cooperative meetings that involved the group members discussing together, I asked each of the group members to sign a confidentiality consent form to maintain confidentiality and not to disclose any information from the meetings (see Appendix 7). The signing of the agreement allowed for open participation, ensuring there was authentic communication, and the group members felt free to talk during the meetings. Also, as indicated on the information leaflet, the audio recorded data was transcribed by the researcher and she pseudonymised the names to ensure anonymity of the data. The participants gave the researcher the permission to share the anonymised data with her supervisors for the purpose of supervision.

All the data documents from data collection and analysis, are kept under lock and key and securely kept by the researcher, in line with the general data protection regulation (GDPR). This research is self-funded, and the Researcher has no obligation to any organisation or conflict of interest that affected the data collection, analysis and data, which further assured participants protection.

Justice

The third ethical principle *Justice* relates to fairness in the conduct of research with its' intent that the' burden and benefits be shared equally between the researcher and participants. The Researcher believes that during the CI meetings confidentiality and wellbeing of the participants was always a priority, the burden of participating in the research activities was kept to a minimum as possible for all the participants. The findings will hopefully have a positive impact on the future healthcare of women and thus the consequences of the research, supports the ethical principle of Justice. The Researcher ensured that the meetings ran on time, questions were addressed, and the data analysis was completed by the Researcher at the request of the other participants given the time constraints that the other participants had in their working environment.

Ethical approval

With regard to this current study, Ethical approval was sought from and granted May 2, 2023, by the Research Ethics Committee of the hospital in Nigeria where this study was conducted (see Appendices 8, and 9) After getting the approval from the hospital in Nigeria, permission

to gain access to participants was sought through the midwives' manager and the medical manager (gatekeepers) who also ensured the recruitment posters were displayed for volunteers. Ethical approval for Low-Risk research was granted by the Human Research Ethics Committee of University College Dublin on June 1, 2023. The reference number is: LS-LR-23-126-Onakayeigho-Obrien (see Appendix 10). Everything went well during the inquiry, there was no concern, and no worry.

Data Collection

As is often the case with Action Research projects, there were some changes in the direction and focus of the study during the data collection period. Initially the intention was to carry out a focus group with healthcare providers that were recruited within the hospital only, but as is often the case with action research the direction of the research changed. The participation changed, and the researcher at the request of the other participants met with the hospital managers and politician policy makers. Another change was to one of the study objectives, coming in as an outsider I (the Researcher) originally thought there was a need to develop a PPH policy with the participants, but the hospital already had a policy which the participants referred to and used to prevent and manage PPH when it occurred.

Before the actual data collection commenced, and upon arriving in Nigeria the Medical Director of the hospital had left the organisation. This necessitated a meeting with the new Medical Director. During this meeting with the new Medical Director the Researcher presented the ethical approval letter she had received previously to access to the hospital. Permission was then renegotiated verbally with the new Medical Director to conduct the research in the hospital. With the permission granted, the researcher gave the Head of Obstetrics and Gynaecology and Director of Nursing and Midwifery Services information about the research to be displayed before the commencement of the cooperative inquiry. The cooperative inquiry that consists of reflection meetings and action phases span over four months – 21st June to 13th September 2023 (see Figure 5.1).

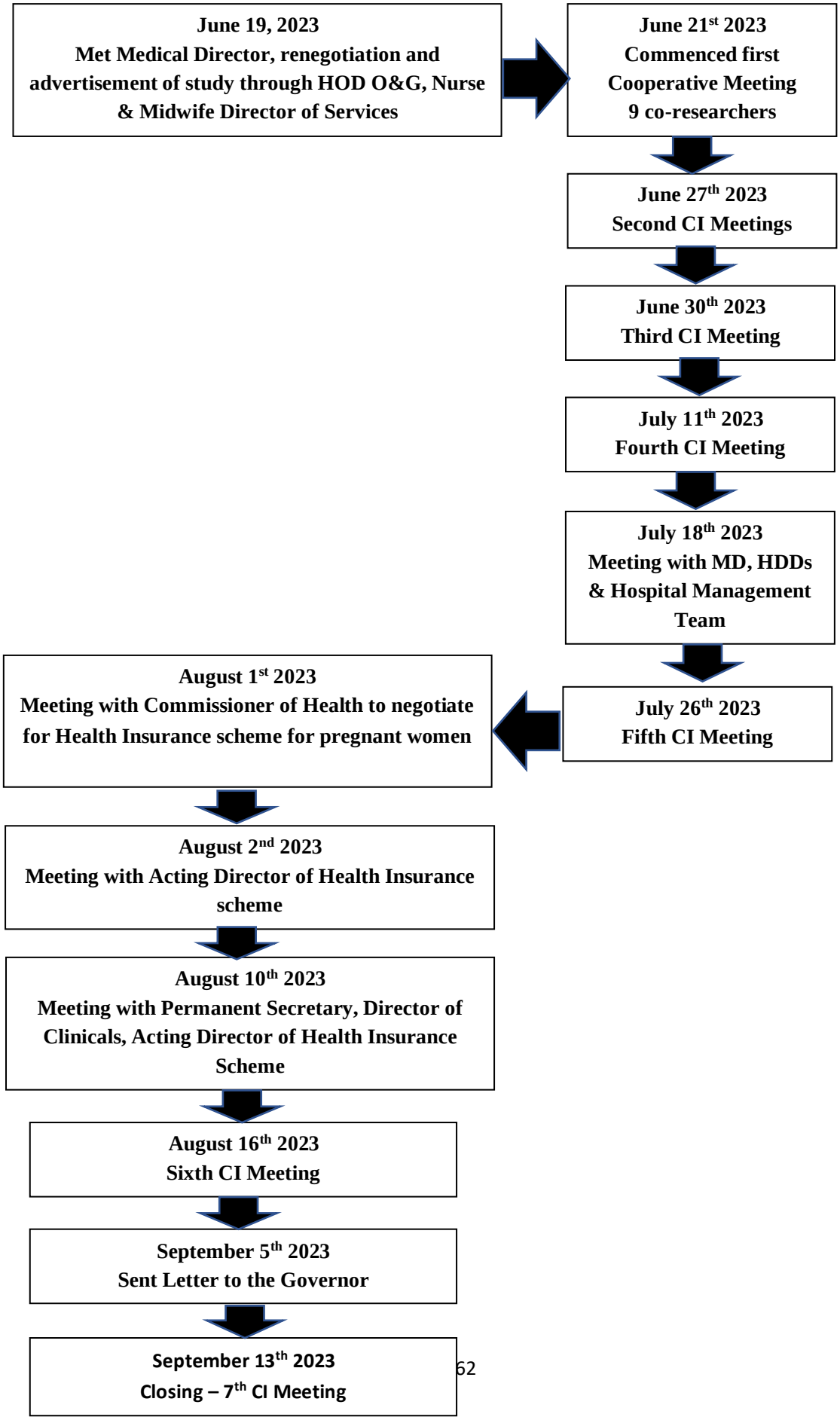

Figure 5.1 Outline of Timeline of Co-operative Inquiry

Cyclical Nature of Cooperative Inquiry

Although numerous definitions and approaches exist for action research, data collection is achieved through engagement with others in a process of action research cycles. There are many different frameworks available to guide the process of inquiry (as indicated in chapter four) and the one selected for this study is the CI framework of Heron (1996) that guided the chosen methodology. The framework starts off with a first CI meeting of introduction to set the context and the purpose of the inquiry, which was considered appropriate for this study. The meetings in this study usually commenced with a short prayer, as it is customary in Nigeria to generally start off meetings with prayers. As praying reassures us that God is in control and will help us during our deliberations. If the group consists of both Christians and Muslims, the prayer will be said by a member of each of the religious groups. As in our case the whole CI group members are Christians. Also, at the start of each meeting the researcher asked the other co-researchers and during the first meeting if they had any questions or if they needed clarification on any aspect of the information leaflets which were sent earlier on, then they signed the consent forms. All the co-researchers also gave verbal consent at the start of each meeting.

The CI cycle, as indicated in chapter 4, consists of four stages, it moves from reflection to action and back to reflection again to complete a cycle. Stage 1 is the first reflection meeting/phase, when all the researchers relate as co-researchers and start to discuss the research question and aim and objectives and plan for the first action phase for the next stage and agree on how they will record data (Heron, 1996). Stage 2 is the first action phase for exploring action experimentally, when all the participants assume the role of co-participants in the clinical area, and working individually and gathering data and recording the data, stage 3 occurs within the Stage 2, when participants immerse themselves, engage deeply in the aspect they are exploring, and Stage 4 is the second reflection meeting when participants gather together again as co-researchers, come together to share individual experience and data, and make sense of their experiences, collating data, reviewing action and plan the next action (see Figure 5.2) these framed an inquiry process for this study, with further practical and visual representation in chapter seven.

The four stages complete a full cycle. In addition, the last reflection meeting of one cycle begins the reflection meeting of the next cycle, suggesting a link between each cycle of the inquiry,

and progressive gathering of data, though each are distinct, and was important in the designing and implementation of this study. Also, through this cyclical movement of CI, the findings from exploring the topic/question are grounded in the series of cycles by the group members. Furthermore, Heron suggests five to eight complete cycles are adequate as they may enhance the opportunity for successful outcomes (Heron, 1996); this research consists of six complete cycles.

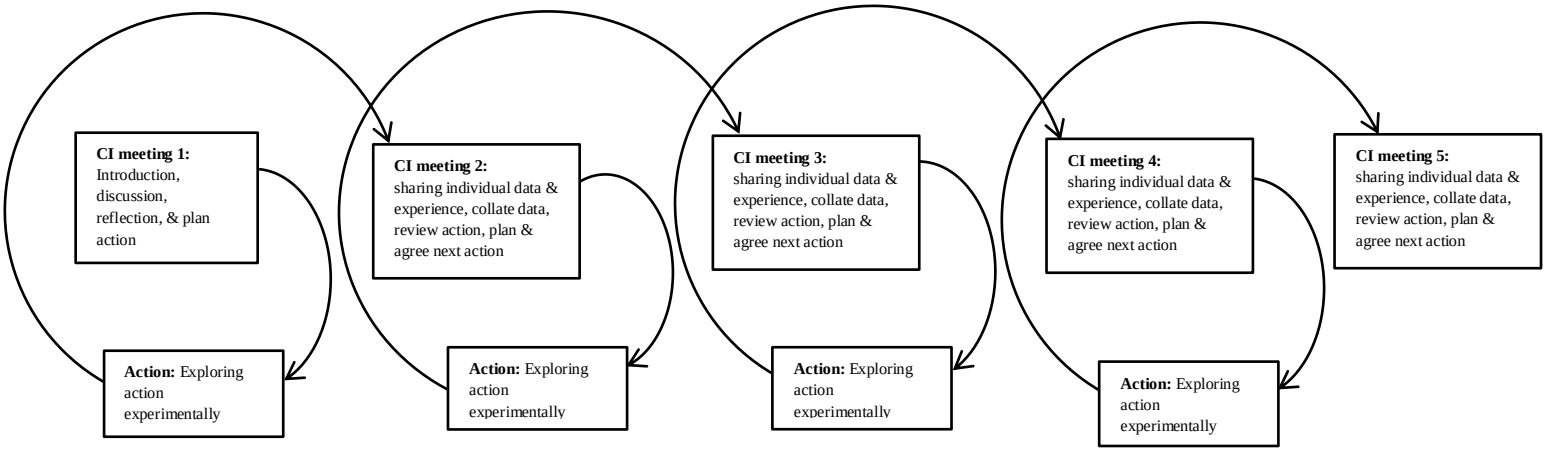

Figure 5.2 Cooperative Inquiry (CI) Cycle

Data Analysis

As described, a fundamental principle of this study was to 'give voice' to midwives and obstetricians, and involve them in a process of change, to improve the current care provided. For maternity care professionals to make meaningful changes and improve the current situation, an approach must be used which best facilitates their voices to be heard about PPH. The reflexive thematic analysis (Reflexive TA) technique was chosen as the most appropriate method of data analysis for this research study. This method was considered the most appropriate because it allows the researcher flexibility to inductively analyse a large dataset (Braun and Clarke, 2022). Reflexive thematic analysis therefore allowed the freedom to explore the content of the CI meetings in terms of the real and live issues related to PPH and facilitated the creation of themes from the important issues discussed and explored in detail by the participants. Furthermore, the idea of reflexivity in reflexive TA aligns with this study' method of data collection. Although thematic analysis has been criticized for lack of rigour

(Nowell *et al*., 2017), reflexive TA provides guidelines for novice qualitative researchers 'to conduct reflexive, systematic and *rigorous* TA, and to produce meaningful and useful analyses' (Braun and Clarke, 2022, p. 10). The analysis for this study followed the reflexive TA technique according to Braun, and Clarke (2022). According to the authors, this method comprises six phases: familiarising yourself with the dataset; coding; generating initial themes; developing and reviewing themes; refining, defining and naming themes; and writing up.

Reflexivity

Reflexivity is an integral concept in qualitative research to ensure rigor, and to explore and deal with the relationship between the researcher and participants (Koopman, Watling, and LaDonna, 2020, Dodgson, 2019, Berger, 2015, Probst, 2015). Reflexivity involves researchers being aware of their personal qualities, such as gender, personal experiences, political and professional beliefs, biases/subjectivity and explaining how they influence the research process and participants (Olmos-Vega, *et al.* 2023, Dodgson, 2019, May, and Perry, 2017, Berger, 2015, Bradbury, 2015). I am a female registered and licensed nurse and midwife, also a registered and licensed midwife educator. As an educator I lectured and supervised students in clinical settings, and heard case histories of PPH. Through self-awareness and self-assessment, on my values, political and professional beliefs, biases and maintaining balance I was able to understand the participants' perspective in the research. Also, the pre-reviewed of the related literature in this current study helped me to recognise underlying assumptions. Such reflection, as Dodgson (2019) points out, increases the credibility of the research outcomes as well as a person's understanding of the process. Thus, reflexivity, formed an integral part of the research process within this study, throughout the data collection period but particularly during data analysis.

The value of keeping reflective diaries in research and throughout action research projects has been discussed extensively (Tahmasbi, Karimnia, and Rahimi, 2022, Bashan, and Holsblat, 2017, Berger, 2015, Bradbury, 2015, Koshy, 2011). As Koshy, (2011) highlights, keeping a reflective diary is a valuable strategy to capture information during action research study. As in all AR projects, new knowledge develops through engagement and action, and with a reflective diary I recorded and evaluated the changes in the inquiry process and reflected on what contributed to the changes. I kept a reflective diary during data collection meetings and data analysis.

Summary

This chapter has described and discussed the study setting which is in a maternity unit of a hospital in Nigeria and the population and sample for this study that included midwives and obstetricians. Also, in this chapter a discussion of the ethical issues that apply to this study is presented. Furthermore, this chapter discussed the data collection framework of cooperative inquiry according to Heron, (1996) that was used for this study. A discussion on the reflexive thematic analysis method used to analyse the data from the inquiry was also presented. The next chapter presents the story of the journey of this research.

CHAPTER SIX

THE STORY OF THE JOURNEY OF THIS COOPERATIVE INQUIRY (CI)

Introduction

Every journey in life has a beginning, so too was the case in this cooperative inquiry which set out to discover *how midwives and obstetricians can contribute to preventing postpartum haemorrhage (PPH)* in a hospital in Nigeria, West Africa? This chapter presents the story of the journey of this cooperative inquiry. It starts with the research aim, research objectives and research question, followed by description of study participants, the demographic characteristics of participants, focus of the research, setting the scene, the meeting venue and a summary.

Research Aim

To work together with midwives and obstetricians to identify steps and actions needed including existing barriers to reduce Postpartum Haemorrhage.

Research Question

How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

Research Objectives

(1) To collaborate with the midwives and obstetricians to identify preventive measures and develop innovative knowledge on prevention of PPH.
(2) To create knowledge and awareness with midwives and obstetricians to prevent PPH.
(3) To collectively take action from the research to inform the utility of the current WHO (2018) guidelines for the prevention of PPH.

Study Participants

The study design is AR which pursues an action or change while seeking understanding through research, the main aim of AR research is to gain positive change and build new knowledge (Casey, O'Leary and Coghlan, 2018). Group interaction is imperative to help us to form opinions/take action on a chosen topic (Bradbury, 2015). In AR, participants are

considered as co-researchers and in cooperative inquiry, members are invited to participate voluntarily, the inquiry initiator is often, but not necessarily, a peer (Heron, 1996). As PPH is an identified obstetric problem in Nigeria/the hospital, the participants volunteered to participate in the research in order to work together to take actions to help resolve PPH and improve the health of women in their care.

Demographic Characteristics of Participants

The data for this study emerged from seven cooperative inquiry meetings that involved nine participants (n=4 midwives, n=4 obstetricians, and the initiating researcher) (co-researchers). Five cooperative inquiry meetings were the plan initially, but as with action research, the participants led the direction, and they asked me to meet others, so the number of meetings increased to seven during the research process. Regarding the participants, two of them approached me to indicate their willingness to participate in the study. I found the other six participants in the seminar room (the room for the reflection meetings) on the first meeting day. When we introduced ourselves, they indicated they came to participate in the research. The participant group included four females and four males, and the majority of them have vast years of experience that range from 2 years to 23 years. The demographic characteristics are provided in Table 6.1. One of the powers of the CI group was that despite the fact that it was extremely busy in the hospital that the other CI members still turned up at the meetings every time because the topic of PPH is so important to them. Despite all the difficulties in the clinical areas, I was encouraged by the number of attendees at each meeting. The number of members during the CI meetings ranged from 6 to 9, the flux in numbers attending was due to the shortage of staff and the busy nature of the hospital. There was great cooperation and active participation in all the meetings, despite the fact that the group members are of different professional bodies (midwifery, and medical). The cooperative inquiry group was dynamic in their interactions together (see Appendix 11). The participants wanted the research site and their photographs to be included in the thesis/study, but not what they said and I maintained that confidentiality.

Table 6.1: Table of Demographic Characteristics of Study Participants

Gender	Religion	Title	Department/Ward	Years of working experience	Years in research site	Highest qualification
Female	Christianity	Chief Nursing Officer	Expanded Programme of Immunization	18 years	18 years	Bachelor of Science Nursing
Female	Christianity	Chief Nursing Officer	Antenatal Clinic	20 years	7 years	Registered Nurse /Registered Midwife
Female	Christianity	Senior Nursing Officer	Immediate Post Operative	11 years	11 years	Bachelor of Science Nursing
Female	Christianity	Chief Nursing Officer	Antenatal Clinic	20 years	4 years	Registered Nurse /Registered Midwife/PHN
Male	Christianity	Consultant	Obstetrics and Gynaecology	20 years	18 years	MBBS/MSC
Male	Christianity	Registrar	Obstetrics and Gynaecology	23 years	9 years	MBBS
Male	Christianity	Senior Registrar	Obstetrics and Gynaecology	16 years	7 years	MBBS/MWACS
Male	Christianity	House Officer	Obstetrics and Gynaecology	2 years	2 years	MBBS

Focus of the Research

This study is an action research project working with maternity care professionals to explore how to reduce PPH in the setting in Nigeria, where maternal mortality ratio is very high. Nigeria as is shown on the Map is divided into 36 States and the Federal Capital Territory, the whole country is further divided into 6 geo-political zones (as already indicated in chapter two) (see Figure 6.1). As indicated in chapter 2, maternal healthcare services are provided in a three-tiered system in Nigeria, namely, primary, secondary and tertiary. These three levels of care are supposed to facilitate pregnant women in receiving care during antepartum, intrapartum and postpartum periods (Aikpitanyi *et al.* 2019, Olatubi *et al*. 2018). However, as the 2019 National Population Commission and ICF indicated, only about 43% of pregnant women had skilled birth attendants during delivery. The remaining large proportion of pregnant women in

Nigeria had unskilled birth attendants, such as the traditional birth attendants (TBAs), and some with no assistance for delivery (National Population Commission and ICF., 2019), and from whom complications such as PPH often occur. In addition, WHO (2023a) reported that Nigeria had an estimated MMR of 1,047 per 100,000 live births in 2020, the highest number of maternal deaths and accounted for more than a quarter (28.5%) of all estimated global maternal deaths in 2020, with approximately 82,000 maternal deaths, (as already indicated in chapter 2). Similarly, the 2019 National Population Commission and ICF reported an estimated MMR of 512 maternal deaths per 100,000 live births, which is very high and formed the context and drive for this research.

Figure 6:1 ***Map of Nigeria showing the 36 States and the Federal Capital Territory, with the Geo-Political Zones. Uploaded by Bakare Muideen O. (2015)***

Setting the Scene

The intention was for me (the research initiator) to conduct the research in a particular government owned hospital in Nigeria. I was surprised when I arrived in Nigeria and found the hospital I was intending to complete my study in had been demolished, and nobody could tell me what had happened. Though the hospital building was no longer functioning, I discovered that the maternity unit had moved, and the hospital was operating, in all different places around the town. I was initially worried because I had received permission from the Medical Director to conduct the study in the hospital situated at the address I had arrived to on my first day. I discovered then that the Maternity unit had been moved to a new location which was about 15 minutes' drive and 30 minutes or more when walking from the original location. The permission I originally had been granted extended to the relocated maternity unit as the organisation had not changed.

Social and Political context: Observation from the Researcher

When I entered the building, I observed that the maternity hospital is in a tight environment, with little space for movement for staff and clients. Under a shade outside the main building is the waiting area, with a very large number of pregnant women presenting for the antenatal clinic. It was a very busy antenatal clinic day for women registered for care, and for those women registering for the first time ('booking day'). The whole place/environment sounded very noisy, which is expected of such a gathering, where people are talking, buying snacks and food from those harking around. Within a step or two from the waiting area I noticed a hall with pregnant women sitting in a queue for registration with the midwives, for vital signs check, and with very small cubicles for palpation and for consultation with the obstetrician, etc. The space is very cramped with pregnant women and staff.

Usually, while waiting to commence the meetings, we talked about the high cost of living in the country and its effect. I discovered that the movement of the maternity unit to the new location was causing other problems, such as women having to get to this new location, it was taking them longer, and it was causing them extra financial problems. The extra financial cost was compounded with the increase in transport fare because of economic instability in the country during the inquiry period.

This research was conducted soon after the transition to a new government in Nigeria (May 2023), and there was high tension emerging from the political situation of the country which impacts cost of living. The cost of fuel increased drastically, so transportation costs were very high. I experienced the high cost of living when I arrived in Nigeria. From my onward journey to my final destination, the transport fare was more than three times the amount I used to pay. Everything has increased in the country, the staff can barely afford to fill their cars with fuel and some even resort to taking public transport to work, whereas there was no increase in their salaries, an area of concern for the staff. Inflation was therefore a significant factor that influenced day to day life in Nigeria similar to what we have witnessed in Ireland, the cost of living was impacting on the lives of maternity care professionals as well as service users. Also, from the discussions I learnt that the hospital is very short of staff which caused considerable stress for the staff because of heavy workloads. These discussions and shared experiences meant we connected as a group and this helped me to begin to understand the situation on the ground. Also, we shared food together which seemed to bind the group.

The Meeting Venue

The first cooperative inquiry meeting started on 21 June 2023 three days after the display of the advertisement for prospective participants. The meetings took place in the seminar room which was air conditioned, and with ceiling fans that made the room conducive and cool from the heat of the warm weather, and was quiet. However, the door made a lot of loud noise on opening and closing it, which interfered with listening to the discussions, and on different occasions I had to say to some of the group members to speak a bit louder. However, the audio recorder captured the discussion so I could understand. Also, as the meeting progressed, I noticed that some staff came into the room with clients' notes to some of the group members, but the conversation flowed without interruption. Before the end of the first meeting, I asked the group members if we will change the venue for subsequent meetings, but they said we need to continue using the seminar room.

Summary

This chapter presented the demographic characteristics of participants who participated in this research project. The participants who are midwives and obstetricians, have vast experience in their various areas of practice. Nigeria, the country in which this study was conducted has a large proportion of pregnant women that had unskilled birth attendants during childbirth. From

the discussion on this chapter, Nigeria is one of the countries in the world that has a very high maternal mortality ratio. The research was conducted in a new maternity unit location because of the demolition of the original site. The new location is however, not easily accessible, causing the women who attended the maternity extra financial cost. The next chapter discusses the findings from the data on how midwives and obstetricians can contribute to the prevention of postpartum haemorrhage.

CHAPTER SEVEN

FINDINGS

Introduction

This chapter presents the findings of an Action Research study with midwives and obstetricians working together seeking ways to contribute to the prevention of postpartum haemorrhage in a maternity hospital setting in Nigeria. The findings emerged from the rich data from the discussions at the cooperative inquiry group meetings during which members went through a series of seven meetings and actions. This chapter begins with a description of cooperative inquiry data collection meetings, followed by the data analysis process, and finally presentation of the themes from the dataset and a summary.

It is worth noting that although, English language is Nigeria's first language, but Colloquial English is also generally spoken during conversation as evident in this study, I have presented the findings in an authentic manner, and this means that at times the quotes are colloquial English.

Cooperative Inquiry Data Collection Meetings

The co-researchers (midwives, obstetricians and I) were flexible about the dates for the Cooperative Inquiry (CI) meetings, and the timespan between meetings varied from one week to two weeks. The first meeting stretched over 1 hour 15 minutes because it included the introduction of CI principles of working together as co-researchers and co-participants, the group members filled the demographic characteristics form, signed the consent form and confidentiality agreement, and introduction of the research aim, objectives and question. While the other six meetings were for around one hour. Also, I was very conscious of the time pressures participants were under, as the number of pregnant women attending the antenatal clinic was still considerably large when we commenced the first meeting (10 am). We discussed the clinic situation, so we decided to commence subsequent meetings at noon so as not to disrupt the clinical activities in the hospital. It meant participants felt more at ease attending the meetings. During the meetings, the group members discussed and shared their experiences and made sense of their shared experiences, looking at the real issues at hand for them and the women attending the maternity. In the light of the discussion, we reviewed the required actions,

and planned and agreed on another aspect of the research question for the next possible action (see Table 7.1) and (see Figure 7.1).

The action phases took place during the intervals between the CI meetings, and occurred in the individual clinical areas, and at meetings with hospital managers and politicians and policy makers. The length of time between the CI meetings and the action phase was to allow co-participants meaningful engagement in the clinical areas and with other stakeholders, and to gather extensive data.

The data from each CI meeting was audio recorded, with consent, and transcribed by the researcher as requested by the group members. Following each of the meetings, the transcript was provided to the other group members for validity and to confirm our agreed actions. A cooperative inquiry group will ideally become more 'conversational' as it develops over time, and this is what transpired within this study and the change was quite rapid. Reflecting, I think the importance of the topic to maternity care professionals but also the dynamics of the group, led to the expediency in which the type of interactions and subsequent actions that emerged, early on in the study. The need for action and a collaborative approach occurred in the group and shared understanding of the objectives of the study was established. The group's genuine interest and mutual respect in each other's experiences and knowledge bases fostered an environment or 'space' that promoted significant debate and learning, and ultimately a desire for change and action. The degree of conscious raising that emerged from the group meetings was powerful to observe. I noticed that participating maternity care professionals were consciously comparing their experiences against the experiences of others. Authentic collaboration was evident throughout the inquiry process. Feedback to participants was a continuous process and, to validate the emerging knowledge and suggested actions, the issues from the previous cooperative inquiry session were confirmed at the beginning of the next meeting. At the request of the group members the research initiator was asked to do the final collating and analyse the data from the five cycles. However, the group reviewed and clarifying various main points from data of the cycles during the final reflection meeting.

Table 7.1: Cooperative Inquiry (CI) Meetings and Actions

Cooperative Meetings	Participants	Discussion and Reflection	Action
Meeting 1	9 Participants	Introduction to the cooperative inquiry principles – work together as co-researchers and co-participants. The group signed consent and confidentiality agreement, Introduction to the aim, objectives and research question. **Planned and Agreed Action:** health education of pregnant and postpartum women to prevent PPH.	Health educating pregnant and postpartum women to prevent PPH.
Meeting 2	6 Participants	Reporting, discussion and reflection on: identify anaemia as risk factor and prevention of anaemia, by optimising haemoglobin level and dietary intake of iron, cultural and lifestyle impact on nutrition in pregnancy, financial preparedness for pregnancy and childbirth, family planning. Things outside the control of group members (Advocacy and powerlessness): ▪ TBAs taking deliveries ▪ deliveries in Churches ▪ reduce cost of maternal services ▪ Government to pay health workers allowances. The girl child empowerment. **Planned and agreed action:** Health Education.	Continued with health education of pregnant and postpartum women
Meeting 3	7 Participants	Affirmed transcribed data. Discussion and reflection on – Optimising haemoglobin level, family planning, Advocacy to Policy Makers, Government, and Hospital Managers (Advocacy and powerlessness) to: ▪ Reduce cost of maternal services, ▪ Address the lack of equipment and staff,	I sent a letter to Medical Director to book appointment. Educating pregnant and postpartum women on: -nutrition -family planning, -financial preparedness for pregnancy and childbirth

		▪ Retraining and training of staff, make policy against early marriage and teenage pregnancy because PPH is common among teenagers. Reviewed health education content. **Planned and agreed action:** ▪ Do appointment letter to Hospital Managers, health education on ▪ nutrition, ▪ family planning, and ▪ thrift (local contribution)	
Meeting 4	8 Participants	Affirmed transcribed data, Reporting, discussion and reflection on: Nutrition to prevent anaemia, Family planning – sex preference for male/female child impact uptake of FP, Financial preparedness for pregnant women to trade and save money for their use, Things beyond our group members control (Advocacy and powerlessness): ▪ Waiting response from Medical Director for meeting with Hospital Managers, ▪ Desired government to bring State Health Insurance Scheme (SHIS) to the Hospital for pregnant women. Maternal respectful care. CI group members planned to produce Nutritional Pictorial Material (NPM). **Planned and agreed action:** To continue with Health, with advocacy on FP, Nutrition, Financial	Meeting of CI group members with Hospital Managers. Continued with education of women on Nutrition, Family planning, and Financial preparedness for pregnancy and childbirth.

		preparedness for pregnancy and childbirth.	
Meeting 5	7 Participants	Affirmed transcribed data. Reporting, discussion, and reflection on: ▪ Plans on content of Nutritional NPM started with the hospital Dietician, ▪ Financial preparedness of pregnant women, lacked funds to trade and save, ▪ Group requested I meet with Governor/Commissioner of Health for SHIS for the hospital (Advocacy and powerlessness), ▪ Need for education of the girl (female) child in Nigeria, ▪ Respectful maternal care. **Agreed action:** To continue with advocacy/health education on Nutrition, Family planning, and Financial preparedness.	Two of the group members continue to work with the Dietician to produce the NPM, Continued advocacy on Family planning, Nutrition, and Financial preparedness of pregnant women. Meeting outside CI group with Commissioner of Health to negotiate for SHIS for the hospital.
Meeting 6	6 Participants	Affirmed transcribed and collated data. Reporting, discussion and reflection on: ▪ CI members received sample of NPM and edited, ▪ Family planning – sex preference, ▪ Feedback from my meeting with Commissioner of Health to the group members, ▪ Reported collated data. **Agreed action:** To continue with advocacy on Family planning, Health education on Nutrition, and Financial preparedness for pregnancy and childbirth.	Meeting outside CI group with Acting Director General of SHIS. Meeting outside CI group with Permanent Secretary, Acting Director of Clinicals, to negotiate further for SHIS. I sent letter to the Governor to book appointment to meet with him. Concluding work on NPM. Continued educating women on Nutrition, Family planning, Financial preparedness for pregnancy and childbirth.

Closing Meeting	7 Participants	CI group members planned places to display NPM and its benefits. Discussion on training and retraining. Information to group members of the appointment letter to the Governor. Evaluation of CI process.	Production of the NPM.

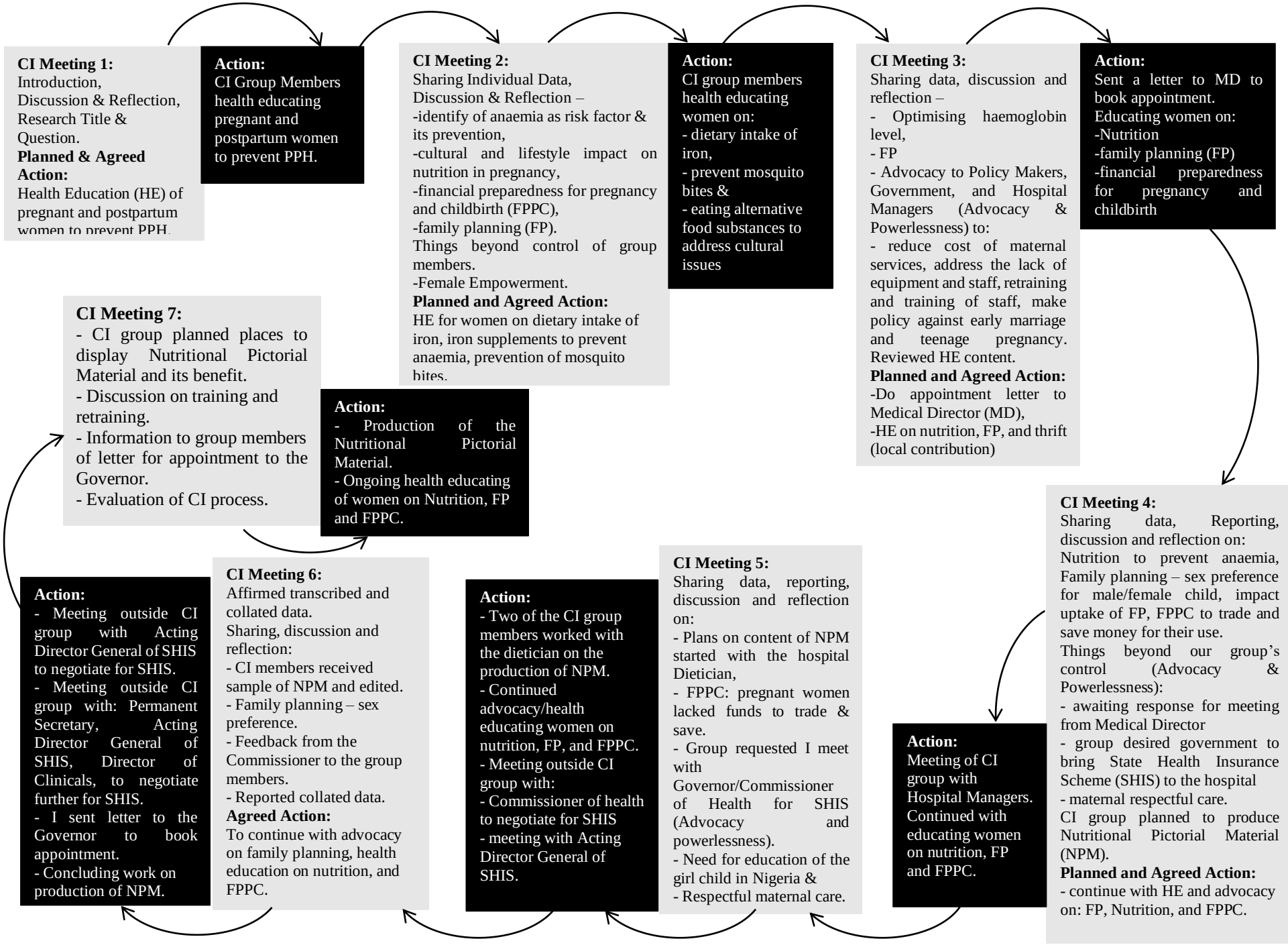

Figure 7.1: Visual representation of Cooperative Inquiry Meetings and Actions

The Analysis Process

Following the six phases of the reflexive TA method (Braun and Clarke, 2022) described in chapter 5, I immersed myself into the data in a process of *familiarising myself with the dataset*. I read and re-read the data several times, in both electronic and hard copies format. The process also involved listening to the audio recording several times to allow for familiarization. Listening was particularly good as I could hear and rehear the passion and enthusiasm of the group and the concerns they revealed. Reading through the data repeatedly and listening to the recordings allowed for reflection and I took notes about analytic ideas and insights related to each data item and of the dataset/transcript. I also found pausing between reading equally helpful, allowing a deep understanding and interpretation of the data. It was exciting reading through the rich data that all the CI members generated together as a group, and I appreciated using the cooperative inquiry approach, which facilitated all the members to participate in generating the research data.

Getting into the second phase of *coding*, I employed an inductive approach for this analysis as it allows the identification of codes and themes within the data (Braun, and Clarke, 2022). Sematic codes (participant-driven) were generated from each data item. I systematically went through each data item and the whole dataset, and as I read through, I tagged any area or phrase that relates to my research question. I used tables, and to generate the initial codes from the dataset. I then moved into the next phase.

During this third phase of *generating initial themes*, I revised the data codes and sorted them for similarity of meaning across the dataset also using tables. Some of the codes were discarded while others were clustered to form candidate themes (initial clustering of codes) (themes) and sub themes that focused on items that assist midwives and obstetricians contribute to the prevention of PPH and what midwives and obstetricians (healthcare providers) can do in their practice to contribute to the prevention of PPH.

In the fourth phase which is *developing and reviewing themes*, I carefully had to check each theme against the data extract that addresses the research question. With this process, I discarded some themes, and merged others to capture the research question. Furthermore, in the fifth phase which is *refining, defining and naming themes*, I have to be clear of what each

theme means, and their uniqueness and what each theme contributes to the whole analysis, so that the naming reflects the data extract and addresses the research question. At the end of this fifth phase I have seven key themes: Health education of pregnant and postpartum women to prevent PPH, Nutrition in pregnancy, Nutritional pictorial material, Financial preparedness for pregnancy and childbirth, Advocacy and powerlessness, Family planning, and Respectful maternal care (see Figure 7.2). Each of these themes are addressed in detail in subsequent paragraphs, and continued into phase six the writing up.

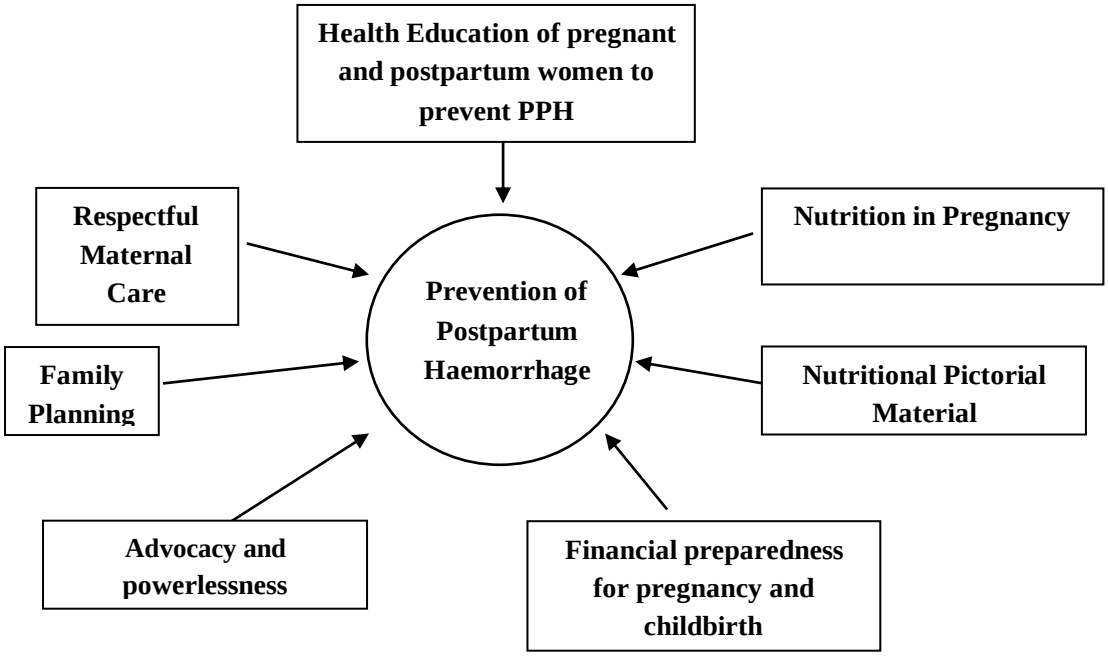

Figure 7.2 How Midwives and Obstetricians can contribute to the prevention of Postpartum Haemorrhage

1). Health education of pregnant and postpartum women to prevent PPH

On presenting the research title and question to the cooperative inquiry (CI) group for discussion and reflection, they decided that our first action in the clinical area to address preventing PPH was through health education/counselling of pregnant and postpartum women I was surprised when the CI group suggested addressing the problem through health education, because I intended to explore and develop PPH guidelines with them. However, considering that the participants are insiders, who work in the hospital, they would obviously have the experience of the areas they need to explore to prevent PPH. Furthermore, from our discussion, I realized that the hospital has PPH guidelines that the participants use to prevent PPH. Besides, as is often the case with action research, the direction of the research changed to the group's suggestion of health educating women to prevent PPH. Participants revisited their experiences of PPH. What became apparent was the importance of health education as a medium for educating women on various ways to prevent PPH. Given the necessary information and education, through this medium empowers women to do something for themselves. This theme emerged early on and was recurring throughout the discussions in the CI meetings. The best approach to adopt to respond to this finding was either in the form of health education/health talk to women during antenatal clinics or individual counselling through which we discourage women from unhealthy practices that result in PPH during labour, as the following quotations illustrate:

"We start by giving health talk, counsel, will be the action in the clinical area, to the women to prevent PPH." (Bose, meeting 1).

"Through health talk I discourage that habit of visiting TBA to get herbs that they use to quicken their labour, to quicken their contraction for dilation of their cervix which normally result to postpartum haemorrhage." (Oboro, meeting 1).

It is worth noting that all the group members identified health education as a medium to involve women in ways to prevent PPH, thus suggesting the recognition of women's contribution to the prevention of PPH. Apart from acknowledging health education as a medium of educating women on how to prevent PPH, most of the group also claim their use of medications to prevent PPH. Although oxytocic medications are interventions to manage PPH, through health education, the group empower women to participate in their care and so contribute to the prevention of PPH. Through the CI group members educating women, they learn how to stay

healthy during pregnancy, labour, and childbirth. One of the areas the CI group members focused on was the need for women's diet to be rich in iron, as highlighted in the following theme.

2). Nutrition in pregnancy

This second theme focuses on nutrition and its relevance to preventing PPH. From the sharing of experiences, discussions, and reflection in the second CI meeting, there appears to be a pattern emerging in preventing PPH, which continued in subsequent meetings; some group members identified anaemia as a primary risk factor for PPH. Identifying anaemia as a risk factor is vital, as it sets the direction of action to solve the problem of PPH. The discussions revolved around how pregnant women should prevent anaemia, as a slight loss of blood volume during delivery may tilt a woman into anaemic heart failure and its complications. Anybody in an anaemic state due to any cause can be at risk if left untreated. Treatment of anaemia depends on the cause. The same with pregnant women; however, in the case of pregnant women, two people would have to be considered (the mother and the foetus). The point of preventing anaemia generated much discussion. We discussed the need for women to stay healthy and optimise their haemoglobin level before delivery. The immediate discussion is a continuous reoccurring aspect in subsequent meetings. The group members assert that optimising haemoglobin level is one of the most excellent means to prevent PPH. The group then focused on taking the following action: educating women on the intake of a healthy diet instead of their interest in eating junk food and stressed taking food substances rich in iron to optimise their haemoglobin levels to prevent anaemia. Although not directly related to nutrition, something that emerged was a need to educate women on the importance of preventing mosquito bites that cause malaria, which would lead to anaemia. The following quotation clearly illustrates the conversation:

"First and foremost, staying healthy optimising a high haemoglobin level or blood level prior to delivery, ... one of the ways to prevent it, is to optimise dietary intake of iron, iron supplement and also diet. ... preventing anaemia in pregnancy, to educate them on diet, ... prevent mosquito bite, malaria." (Temi, meeting 2)

The CI group members stressed the importance of educating women to eat diet rich in iron to prevent anaemia that would predispose them to PPH. In addition, the discussion on nutrition

during the second meeting changed direction to cultural issues and lifestyle impacting pregnant women's dietary intake. Some group members also expressed that culture and practices from local culture were an obstacle for pregnant women taking nutrition beneficial during pregnancy. Although the members tried to dissuade women from forming opinions regarding the food they forbid, group members, being aware of the cultural beliefs and practices, advised women to eat alternative food substances that would keep them healthy. It is apparent from the conversations that ensued that culture and cultural beliefs led to conflict for professionals. The following quotation clearly demonstrate the impact of cultural beliefs:

"… In that diet, I found out that there is still a lot of cultural issues of some food, like snail that's rich in iron and other micro nutrients, some tribes don't like it, they forbid it, especially women who are pregnant. I now have to ask them, why do you forbid it, what is the main thing? They said ha! When they eat snail, that if it is female, the female's genital become very big and it may now lead subsequently to promiscuity. They liken the part of the snail, they said that it looks like the external genital of the female, so they now think that eating that will lead to promiscuity, … But I said God has made all food for our own use, that if you feel you cannot take this because of cultural reasons, but this is an equivalent that you can take, so I believe that when you use those other food, you will be able to replace you lost iron stores." (Temi, meeting 2)

The whole issue of culture on diet/nutrition is a deeply rooted belief in many Nigerian customs and is an area one must address with caution. Most women will do everything possible to uphold their husband's traditional culture because they believe that if they do not, it can cause negative repercussions such as PPH and the death of the child or the mother. As the aims and objectives of this study were to be action oriented, seeking to work with participants to seek solutions to practical problems, together with the CI group members we thought of alternative ways to address these cultural practices. The impact of cultural beliefs and practices on diet in pregnancy and the discussions that ensured resulted in producing the nutritional pictorial material (in the subsequent theme).

It is worth noting that of the different known PPH risk factors, such as multiparity, grand multiparity, primiparity, labour augmentation, induction of labour, instrumental delivery, perineum trauma, episiotomy, advanced maternal age, and anaemia, anaemia was the risk factor that we focused on for women to prevent. Our focus suggests anaemia as the prevalent PPH risk factor seen in practice. So, as an action research study, we focused on solving the

practical problem – of anaemia by educating women on the importance of eating food rich in iron to optimise their haemoglobin levels. Also, as we noticed cultural practices, beliefs, and lifestyle impacts on women's nutrition, we sought a way to resolve these issues and make a change in practical ways that would have an impact, as in the discussions in the following theme.

3). Nutritional Pictorial Material (NPM)

As always, action researchers often try to find solutions to practical problems, so the co-researchers in this inquiry discussed ways to resolve cultural practices and beliefs that impact pregnant women's nutrition, which is vital to optimise their haemoglobin level before childbirth to prevent PPH. The cultural practices and beliefs around nutrition during pregnancy raised significant and intense debate. So, during this fourth CI meeting, Igho proposed planning a nutritional timetable for the women who come to the antenatal clinic (ANC). The other group members agreed that this was a good idea. Also, it was interesting to observe during the discussion that all the group members considered the appropriate and culturally accepted alternative types of food items in the Nutritional Pictorial Material (NPM). We considered the women's financial strength during the discussion. Furthermore, it was wonderful to see how motivated and engaged the group was despite all the difficulties and inadequate equipment and staff; they were motivated to see changes by educating women to eat the correct food to optimise their haemoglobin levels. The following quotation illustrate the discussion:

There will be variety of food items there (NPM). So out of the variety they will choose the kind that they can eat to build their blood." (Nosa, meeting 4)

The idea of having the NPM is to assist women with the option of food substances that are essential to stay healthy and to optimise their haemoglobin level before delivery. So, considering the local culture is essential to encouraging women to listen and embrace the education about the need to eat food rich in iron. Although the CI group members would have wanted each woman to have copies of the NPM in leaflets, the possibility was remote due to a lack of funding within the hospital. So, the alternative suggestion was for women to take a picture of it with their phone because, as Temi rightly said, *"... what you see, you can easily remember and have influence"*. The NPM has been produced and displayed in the antenatal clinic (see Appendix 12).

Through my intervention as an outsider and a neutral person during the side meeting with hospital managers, that is, the new participants[2] (Hospital Managers) outside the CI meetings, delightfully led to the production of NPM, one of our achievements from this research. The following quotation clearly highlights the enthusiasm of the manager to see that the production of NPM come to reality:

"Then for the nutritional pictorial material thank God our HOD is here, you have to keep on informing me about that, you also, get back to me regarding the monetary involvement." (Otuor, Hospital Manager)

Some of the group members worked with other staff outside the CI group, such as the Dietician and the Graphic Designer, on producing the nutritional pictorial material that will provide appropriate food items and the option of food items for pregnant and postpartum women. The group continued the discussion on the production of the NPM through all the subsequent CI meetings.

4). Financial Preparedness for Pregnancy and Childbirth

The key issue and focus that formed this fourth theme was that the CI group members shared their experience of the financial status of pregnant women, many of whom were from lower socio-economic groups. The impact this has had, was that many pregnant women who attend the hospital could not afford to buy food items that are rich in iron that can help them to optimise their haemoglobin level. Additionally, they cannot afford to buy medication and pay their hospital bills. The women's situation generated a long discussion and much debate. Reflecting on the situation, the group considered the best way to solve this practical problem. A discussion on the theme around financial status and its implications began during the second meeting and was threaded throughout each subsequent meeting. Although the CI group members acknowledged the financial status of many of the pregnant women, they felt that women should be able to contribute to their well-being in some way. As group members indicated, pregnancy duration is over nine months, during which pregnant women should save the money they would need.

[2] The new participants refer to the Medical Director (MD), Heads of the different Department, and the Hospital Management Team who were not part of the cooperative inquiry group of this study.

Indeed, conversations around finances, specifically lack of finances and the impact on diet during pregnancy, are a common theme. Additionally, group members acknowledged that many of the women do not have money to eat well and that many of the women depend solely on their husbands to give them money for everything that they need during pregnancy and childbirth. Experience has shown that in some cases, their husbands do not have enough or any money to give their wives. Especially with the political situation in Nigeria, which has resulted in many foreign companies going out of business and leaving the country, local companies and factories closing, and many people becoming redundant. I believe it gives a woman some dignity if she can contribute, even in a little way, to the family's upkeep and care for herself during pregnancy and childbirth. To help solve the women's problem, the group members agreed on the action of encouraging women to engage in some forms of work or petty trade, to sell any items, seasonal food items such as roasted plantain, corn, and various types of fruits, sachet water (popularly called pure water), from which they can save money gradually to help them in feeding and care of their pregnancy. The following quotation illustrate the conversations:

"Just because you are not doing anything you are waiting for your husband. Anytime they admit them they will say they are waiting for their husband,; they will always wait for their husband because they don't have money. … I encourage them to have this save box[3], they can be dropping a hundred, hundred Naira everyday at the end of the month, they will see that they gather three thousand Naira (€6). I encourage them to do something, when their husband gives them money they can take a hundred Naira from it to use, I told them not to wait for their husband. … Pure water, they don't need much cash to start selling pure water, the seasonal fruit, they don't need much cash to start selling seasonal fruits. Like people are selling oranges now, they are selling bole (roasted plantain), corn, and all these pears are invoked, anything that is invoke just sell. (Eze, meeting 4)

Although CI group members encouraging women to engage in some business was a welcome idea for the women, but many women do not have extra for savings. The group members shared that women were not responding well to the suggestion of a local contribution of money, either using a save box or doing 'Osusu'[4]. The members added that the women's response was

[3] Save box is a small box made of wood with a tiny slit on the top through which to put in money.

[4] Osusu is local contribution of an agreed amount of money daily by a group of individuals, and on rotational bases collect bulk money at the end of the month.

because of their weak financial status; the harsh economic situation in Nigeria during this research further compounded the situation. The focus on the need for women to prepare financially for pregnancy continued during the fifth CI meeting.

As the objective is to ensure that women stay healthy and can optimise their haemoglobin levels before childbirth, the group members exhibited continuous enthusiasm to find ways to resolve practical problems. During this discussion in the fifth CI meeting, the group members continued to deliberate on women's financial difficulty in purchasing food and saving for childbirth. As the discussion progressed, Igho, one of the members, suggested that group members should encourage the women to farm, which would help them to get food items for feeding and optimise their haemoglobin level. Although the group members welcomed the suggestion of women farming to get food items, a group member, Jiro, pointed out the insecurity that affects farmers in Nigeria. Insecurity is a major problem in Nigeria, and the protracted and reoccurring multidimensional insecurity impacts all works of life. Herdsmen threaten and kill farmers, so farmers fear going to their farms, which makes food stuff less available and expensive. So, because of the insecurity issue, the group further suggested encouraging the women to look for any small space in their compound to farm. However, most women are tenants, and with negotiation from the Landlords, they can get a space to farm.

Financial implications were a recurring theme during the fourth, fifth, and subsequent CI meetings, the CI group members further considered the financial condition of women who attend the hospital and highlighted how important it would be for the government to bring the State Health Insurance Scheme (SHIS) to the hospital. The group discussion outlined how the health insurance scheme would greatly benefit women, as they will contribute as little as 50 Naira (Nigerian currency) (less than 5 cents) any day they attend the antenatal clinic. Furthermore, as a member explained, when women register for the SHIS, their hospital bills will be covered, so they would not need to pay out of pocket, which most of them may not have at the point of need. The government consistently announces the benefit of the SHIS for healthcare; this consistent announcement is what one of the group members, Eze, stresses as 'sing' when she was encouraging women to register for the scheme. The following quotation illustrate the discussion:

"… the NHIS (National Health Insurance Scheme), which I support fully, because in that case, they just contribute little and when it's time for you to deliver you pay little or nothing … it will help them (the women) a lot, in such, … for delivery, … the health insurance pays the money, so, now, it's not a matter of what drugs, it's a matter of this delivery has been paid for at this amount, …" (Dupe, meeting 5)

Although the group members expressed that the SHIS would benefit pregnant women, the hospital has not had accreditation for the scheme. The non-accreditation of the hospital for the SHIS then raised awareness of another issue, the limitations that existed owing to the existing political and social structures, as the following theme presents.

5). Advocacy and Powerlessness 5). Advocacy and Powerlessness

Another theme that emerged throughout the conversations was advocacy and powerlessness. From the sharing, discussion and reflection during the CI meetings, the group acknowledged that preventing PPH requires all interested and relevant stakeholders' approach. It was evident that advocacy was a central focus of the meetings in terms of what the group members acknowledged and what they could do to address the difficulties that existed in preventing PPH. However, the group's sense of powerlessness was equally present in terms of what they could not achieve or change. As the group members kept coming to meetings, they got such good guidance even though they felt so powerless because nobody was listening to them. During the CI meetings, they gave me all the information and names of who to go to make the changes, and I was able to make changes on their behalf. A key focus of the discussions was an expression about what was beyond their control and what was needed to enhance their services. These centred on factors such as reducing the cost of maternal services, lack of equipment and staff, needing more training and retraining (in-service training), production of NPM, and making the hospital a designated centre of the State Health Insurance Scheme (SHIS). The powerlessness felt by the group and the need for an outsider to negotiate for change and meet with health managers (hospital managers, and governor/commissioner of health) emerged during the second meeting and extended into the third, fourth, and subsequent CI meetings.

The consequences of the conversation and reflections were twofold. Firstly, the other co-researchers requested that I lead the CI group and present the issues we had identified and raised to the hospital managers and, secondly, to the governor. If he (the governor) is unavailable, he may ask me to see the commissioner. I felt that as I do not work in the hospital

and do not understand the system, I would not be the right person to present the issues. So, I suggested that one of the group members who works in the hospital should be the one to lead the group in presenting the issues to the authorities. However, the group insisted that I should represent the group. The group expressed their trust in me, by saying, 'you are a Reverend Sister, a Nigerian studying outside the country, and a neutral person, so they will listen to you'. The group considers me as the right person to help make changes on their behalf. The group acknowledged my role as one who may have the power to do what they cannot do, being an outsider. The following quotation clearly illustrate our conversations:

"We have all agreed at this, so you put it out as these are stakeholders' approach, as it were we've met, this what the team say from interactions … you write officially to book appointment you now specify the persons the heads of department that should be at the meeting. … you will invite us and we'll also be there because we are all part of the team. …" (Temi, meeting 3)

Following the group decision, and as with all action research projects, the direction of the study changed, and I found myself speaking for the group with new participants as requested by the co-researchers; they effectively led out on the direction and actions of the study. Based on the group's request, I wrote a letter to the medical director (MD) to book an appointment (see Appendix 13), to which I received a response inviting me to a meeting with the hospital managers (see Appendix 14). I invited the CI group members via phone to the meeting with the hospital managers held on July 18, 2023. It was encouraging to see eleven hospital managers in attendance and five CI group members at the meeting in the MDs' office, an airconditioned, spacious, and conducive room (see Appendix 15). Reflecting on the number in attendance and their keen interest in listening to me, I felt they were willing to see improvement in the services they provide. There was active engagement and interaction during the meeting. After presenting our findings and request (see Appendix 16), the MD invited other managers to discuss the issues I raised, and there was an extensive debate listening to hospital managers' responses, I could feel their struggle and handicap in addressing some of the hospital's inadequacies. Although they seemed concerned about the inadequacies, they equally expressed that somethings were outside their control. However, I suggested that hospital managers continue to discuss with the State Government to provide the inadequacies necessary to facilitate the provision of care. The meeting between the hospital managers and the CI group members was engaging. Although some of the requests I presented were evidently out of the

hospital managers' control, I achieved some of our requests that participants would use to help women optimise their haemoglobin level before childbirth, prevent maternal morbidity and mortality from PPH, and improve the provision of care beyond just the CI group members to other midwives and obstetricians in the hospital. Regarding training and retraining (in-service training), there was also a promise to reintroduce grand rounds to provide midwives and obstetricians with continuous updates to enhance the service they provide.

The discussion concerning the theme of powerlessness continued during the fourth and subsequent CI meetings. During this meeting, group members expressed having done all within their limit that can contribute to preventing PPH, which would continue. However, group members now desired the accreditation and bringing the SHIS to the hospital as it would greatly benefit pregnant women. The idea was that when the SHIS is in the hospital, women would be encouraged to continue to use the hospital for their care during pregnancy and childbirth instead of going to TBAs because of cost. However, group members expressed that negotiating with the government to bring the SHIS to the hospital was beyond them. Healthcare is a social service, as Temi, one of our group members, uttered during the second meeting, so the government's active role in assisting pregnant women is vital, especially in Nigeria, which has a very high maternal mortality ratio. During this fourth meeting, as the discussion continued, a sense of compassion was felt in the other members' voices. The group believed that the State Government was supposed to bring the SHIS to the hospital where a lot of poor pregnant women attend for their care. As many women do not have money for their hospital bills, having the SHIS in the hospital would allow them to have skilled birth attendants during childbirth and prevent complications such as PPH. One of the group members highlights that PPH is common among demographics of people of low socio-incomes, so the government putting the insurance scheme in the hospital would be very helpful for pregnant women, as the following quotation highlights:

"… the main place where they have a lot of these indigents' patients, because it would have been important if the place has been accredited, but maybe you can also make a case, he listens to foreign people. and then this centre does not have insurance, how do we now help the poor … do it for us then, … it's very difficult. … You are a Nigerian but you are coming from outside, so, when he sees that you are coming from outside, you want to help the system to be able to improve, he will want to hear from you." (Dupe meeting 5)

I was surprised at the other group members requesting me again to go to the governor or commissioner (who is outside the maternity hospital) on their behalf. I felt incapable of approaching policymakers and did not understand the state's politics. So, I suggested that some of them who know the system should go or come with me, but they refused, saying that their presence would result in a negative response from the governor and insisted that I should go alone. The group further indicated that if I wanted to help the women, I should go and do the negotiations.

On reflection, I felt the aim of the research is to help the women, and with AR studies, the direction changes as the inquiry progresses. Then, on August 1, 2023, I met with the Commissioner of Health and informed him of my research and that a lot of pregnant women who attend the hospital are indigent and are not able to buy their medication and pay their bills so they discontinued their care. I then negotiated with him to bring the State Health Insurance Scheme to the hospital as it would be of great benefit to pregnant women, especially indigent women. Also, if the SHIS is brought to the hospital, it would encourage pregnant women to use skilled birth attendants during childbirth. He directed me to the department in charge of the scheme. On August 2, 2023, I met with the department's Acting Director General; I also presented my findings and requests as I did with the Commissioner of Health. The acting director general of the scheme said it would be possible to implement it in the hospital. He said he would discuss it with their team to determine how they would start the scheme. On the day he promised to start the scheme, he phoned me to say that I needed to speak with the Permanent Secretary (PA) of the hospitals in the State about it. We spoke on the phone, and the PA invited me to a meeting in his office on August 10, 2023. Present at this meeting were the PA, the Acting Director General of the SHIS, the Director of Clinical, and myself. Our discussion was extensive, and then, in the end, the acting director general of the SHIS said we had to wait until the Director General, who was then on leave, returned. While waiting for their responses, I wrote to letter to the governor on September 15, 2023, requesting to meet with him following my finding that in the hospital of indigent pregnant women who were unable to buy medications and pay their bills, so they discontinued their care, and for him to consider taking the SHIS to the hospital for pregnant women, especially the indigent women. We were still waiting for responses before the conclusion of the data collection. It is worth noting that I was able to start negotiations on behalf of the other group members with policy makers for SHIS to be brought to the hospital for pregnant women before the conclusion of the research.

6). Family Planning (FP)

Family planning is another theme that emerged during the second CI meeting. In fact, FP was a theme raised in all of the subsequent meetings and suggested as another way of preventing anaemia, a risk factor of PPH. The discussion focused on educating women on FP as it would allow them time to replenish their lost stores of iron and space pregnancies and return to better health before entering another pregnancy. Following the flow of the discussion, it implies that if there is no replacement of lost iron that occurs with frequent delivery, it will leave women in an anaemic state, which may result in anaemic heart failure and even death. The purpose of this research is to prevent PPH and its complications. However, reflecting on the discussions, I acknowledged that I have reservations about artificial FP, and I think my religious background has influenced me. My religious beliefs do not promote the use of artificial devices for FP because we believe that they interfere with the natural process of conception, except natural FP. So, I was conscious not to allow my beliefs to influence the discussion, and I listened attentively to the group discussions and decisions. The following quotation clearly illustrate some of the discussions:

"*We encourage the ones that have had a lot of babies or the ones that are always having children, we encourage them to go for family planning, because if that womb is continuously stretched that kind of person will be predisposed to having PPH during delivery.* (Eze, meeting 3)

Considering the catastrophe that can occur from PPH, healthcare professionals need to continue educating women on the need to rest their uterus to replenish their iron reserves before entering another pregnancy. The group members' experience and perceptions about the need for careful FP were a central focus of these discussions and in the fourth CI meeting, which touched on women's response to its uptake.

During the fourth CI meeting, the group highlighted an important issue that impacts FP uptake, which is sex preference. This aspect also generated much debate and is the desire of the husband to have a male child who will maintain the family name and own the family property. Thus, it puts pressure on the wife to continue giving birth; so, the woman may even have up to 5, 6, or more until she gets a male child. If the wife does not have a male child, some of the husband's family members may even tell her that the house (referring to the husband' property)

does not belong to her, that she is just present but owns nothing. I think people who hold the immediate idea consider getting children as ultimate in marriage and the children as more important than the person of the woman who gives birth to the children. In addition, one cannot imagine the psychological trauma of women in such marriages.

In most cases, as some group members added, the man may decide to marry another wife or engage in extramarital affairs in the search for a male child. In some other cases, even if the husband is satisfied with the wife giving birth to only female children, his parents may influence him to get a male child from another woman, either by marrying another wife or through extramarital affairs. So, some of the women, because they want to remain in their marital homes, would not accept FP; they would rather stop going to hospitals for care of their pregnancy and childbirth and go instead to TBAs for childbirth, where some may end up with PPH. The preference for male children creates gender inequality in our society. As a woman, I feel concerned about the stress and danger that such women go through in marriage in Nigeria. The focus of this study is to improve the profile of women who attend maternity hospitals; also, sharing the findings through publication and seminars can contribute to the status of women, especially in Nigeria. The group members feel committed to contributing to the prevention of PPH, as the following quotation illustrate:

"... those I know will benefit there were two ladies particularly I saw in the ward who were para 6. I have to tell one, one came from ... To say I'm not going to discharge you, after discussing family planning option with her, opposite is the family planning clinic, I said I'm not discharging you until you have a section where they will be able to talk to you the nitty gritty of family planning then you now have a choice to make, I will not discharge you. ... her pack cell volume was borderline. I said in order to save to care for your children to reap the fruit of your labour you will have to go for family planning." (Temi, meeting 4)

Culturally, in Nigeria, the majority of married men prefer to have male children, mainly because the husband wants the continuous existence of the family name. However, in recent times, some husbands have a preference for female children because they believe that the female child would take care of them in their old age,

Arising from the discussion of the female child is about the education of the girl child (female child). The CI group members first mentioned the education and empowerment of the female

child during the second CI meeting, and it was raised again during the fifth meeting. The discussion about female children generated extensive debate. The group members expressed great concern for the female child in Nigeria because, from practice, group members have noticed that PPH is common among teenagers and indigent women, as already mentioned in this chapter. So, educating and empowering the female child is of great importance, especially in the prevention of PPH and maternal mortality in Nigeria. The issue of the female child is so much of a concern that one tribe in Nigeria has a special name for females as '*Omotejokwo*'[5]. It is a worrisome situation in Nigeria because the education of the female child is not a priority in many families. In many cases, the husband (father) will educate the male child while the female child will be given up in marriage.

My experience has been that the affairs of women are not of priority for the government of the country; this is reflected especially in the high maternal mortality in Nigeria, with an estimate of 556 deaths per 100,000 live births in 2018 (National Population Commission and ICF., 2019) (as already indicated in this thesis). I believe that when the female child is educated, she will ensure that she does some work that will earn her money to care for herself during pregnancy and choose what entails a good healthy diet. Also, with the female child education, she would aspire for a position or join politics to influence the law regarding maternal healthcare services in Nigeria. Although few men (husbands) now recognise the worth of women in Nigeria, many of us (the CI group members and people that I know) still have concerns about the female child in the country.

As action aimed to change the narrative of female children, the group members suggested ways to address the situation and to advocate during health education for women to educate their female children. The need for advocacy on protection and the education of the female child would be what the CI group members want to happen. The CI group members advocated FP to enable women to replenish their iron reserves to prevent anaemia, a risk factor of PPH. So, preventing anaemia would contribute to the prevention of PPH.

All the findings presented already have been mainly about how co-researchers can assist women in reducing the occurrence of PPH and its consequences. However, the following theme

[5] Omotejokwo means a woman is also a human being who deserves recognition

discussion is particularly about the need for respectful maternal care from the hospital staff and the hospital environment.

7). Respectful Maternal Care

As the group considered further ways to contribute to preventing PPH, a discussion about respectful maternal care and behavioural modification arose. This finding emerged first during the second meeting when group members expressed that most things within the hospital were beyond their control. One other group member suggested that despite the situation, staff still have a role to play by being empathic in providing care. The following quotation highlight the discussion:

"I wouldn't agree with you. … Well what we can do at our end. Fine I will say first and foremost is be present, be empathic, treat people with respect." (Temi, meeting 2)

Treating women with respect is very important, because it will continue to attract pregnant women to attend the hospital for care and childbirth. However, if women do not get a good experience in the hospital, they may resort to unskilled birth attendants such as the TBAs, where they could have complications like PPH. Although the CI group seems to acknowledge the need for attitudinal change/behavioural modification, some group members expressed that it was due to pressure from a heavy workload shortage of staff and equipment, as expressed in the following quotation:

"The attitudinal change is a process, it cannot just happen suddenly. As he said we are already edgy, we already have a lot of things we are fighting for. So, to come out of them, sometime the work can be very you can take ten patient in a day and the eleventh one is now coming, she wants you to attend to her like she is the first patient you have seen, sometimes you loose your cool and all that, so it will be a gradual process but we are starting, and we see how it goes." (Dupe, meeting 4)

Providing care with a shortage of equipment and staff can be quite challenging. The shortage and its effect were some of the issues I presented during the meeting with the Hospital Managers, and one of them acknowledged the need for respectful care. In addition, the discussion raised the participants' awareness of the importance of respect for their clients.

Both CI group members and hospital managers acknowledge the need to create an environment of respectful maternal care. Such an environment would attract women to attend the maternity hospital to use skilled birth attendants for pregnancy care and childbirth, and reduce women's preference for TBAs, and faith-homes, where complications such as PPH often occur.

Summary

This chapter discussed the findings from the data collection of this study from which seven themes – health education of pregnant and postpartum women to prevent postpartum haemorrhage, nutrition in pregnancy rich in iron, nutritional pictorial material, financial preparedness for pregnancy and childbirth, advocacy and powerlessness, FP, and respectful maternal care – emerged from the rich data which resulted in multiple actions. Through the action and reflection cycles that occurred, knowledge was generated and shared around about the causes of PPH, including anaemia secondary to poor nutrition, which was linked with poverty. So, CI group members taught women to prevent anaemia by taking iron-rich nutrition to help them optimise their haemoglobin level to prevent postpartum haemorrhage. Furthermore, CI group members noticed during clinical practice that some women do not eat iron-rich food because of cultural beliefs and practices. In order to solve the cultural issue, we produced nutritional pictorial material with various food items that give women options from which to select without interfering with their cultural beliefs and practices. Also, CI group members found from practice that a lot of indigent women who attend the maternity hospital could not afford a diet that is rich in iron and have no money to buy medication and pay hospital bills. So, to solve women's financial problems, CI group members empowered women to be self-reliant by encouraging them to engage in some form of trade or work to get money to feed, buy medication, and save in preparation for childbirth. In addition, to support women's feeding, we encouraged women to do farming in order to reduce spending costs.

The participants (the other group members) changed the direction of the study at their request for me first to lead the group to meet with the hospital managers to negotiate how to reduce the cost of hospital bills for women, provision of more equipment and staff, training and retraining (in-service training) that would enhance the provision of care. Secondly, I started negotiating with policymakers/government to bring the State Health Insurance Scheme to the hospital, as it would help women pay their hospital bills. Also, as with the scheme, there would not be

paying out of pocket, which would attract women to avail of skilled birth attendants during childbirth and reduce them going to TBAs and Churches where complications such as PPH often occur. CI group members also encouraged women to do FP as it allows them to space pregnancies and replenish their iron reserves to optimise their haemoglobin levels and prevent PPH. Also, the CI members raised the awareness of women for the need to educate and empower their female children to be self-reliant and know how to prevent PPH. CI group members recognised the need for respectful maternal care so that women would continue to come to the hospital to use skilled birth attendants during pregnancy and childbirth. The next chapter is the discussion chapter.

CHAPTER EIGHT

DISCUSSION

Introduction

This study set out to answer the question '*How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?'* Action Research (AR) was the approach taken by the Researcher to work with a group of Midwives and Obstetricians towards a goal and initiate improvements (i.e., the prevention and reduction of PPH in their maternity care services). Given that the role of AR as a methodology sets out to solve real-world problems and produce new knowledge (Casey *et al.* 2021a, Casey, O'Leary and Coghlan, 2018). AR was deemed the most appropriate design fit for the study. The purpose of this chapter is fourfold. Firstly, I will briefly consider the key themes that emerged from the data during the CI meetings with midwives and obstetricians. Secondly, I will consider these key findings in light of the evidence in the literature. Thirdly, I will present a discussion on how through employing action research methodology enhanced this study, I also reflect on my experience of using a cooperative inquiry framework within a maternity care hospital to address prevention of PPH. Fourthly, I will present the limitations encountered and a series of recommendations to emerge from this research. This chapter closes with a conclusion.

1) The key themes that emerge from the data during the CI meetings with midwives and obstetricians

When I set out for Nigeria the main objective was to work with midwives and obstetricians to gain knowledge on how to contribute to prevention of PPH and whether the healthcare professionals follow the WHO (2018) PPH guidelines, with the view to taking collective action to inform utilization of the guidelines.

When I arrived at the Hospital (research site) and I met the Cooperative Inquiry (CI) group members (the participants who are midwives and obstetricians) who revealed that they already follow the WHO (2018) guidelines, and they are also using the E-MOTIVE protocol, which they affirmed was working for them. Thus, from the outset the direction of the research changed and was led by the need to work together towards preventing PPH through Health Education of pregnant and postpartum women.

Employing the process of cooperative inquiry an action research qualitative approach, and through the action of reflection cycles that occurred among the CI group members, Knowledge was generated and shared around seven key themes: Health education of pregnant and postpartum women to prevent PPH, Nutrition in pregnancy, Nutrition pictorial material (NPM), Financial preparedness for pregnancy and childbirth, Advocacy and powerlessness, FP, and Respectful maternal care (see Figure 7.1).

The first theme, health education, was the medium participants used to educate pregnant and postpartum women on various ways to prevent PPH. The second theme is nutrition in pregnancy. Participants identified anaemia as a risk factor for PPH which makes many women susceptible to PPH. Therefore, participants took the action to educate women on the intake of nutrition rich in iron, prevent mosquito bites and worm infections. The third theme is the production of nutritional pictorial materials to solve the cultural beliefs and practices, and to help improve ignorance of appropriate nutrition that impacts pregnant women's nutrition. The fourth theme is financial preparedness for pregnancy and childbirth. The findings in this theme addressed how women were educated to address their financial difficulty. Many women who attended the maternity unit were from a low socio-economic group who had little or no money to buy food rich in iron, and for their care during pregnancy and childbirth. The fifth theme is advocacy and powerlessness which are two interlinked factors that had the potential to impact maternity care providers' ability to prevent postpartum haemorrhage. The participants recognised the importance of involving stakeholders to enhance the prevention of PPH. The sixth theme is on family planning (FP) which participants felt is one way to mitigate PPH that arises from anaemia that occurs following with multiple pregnancies and births. The participants' idea of promoting FP is to allow women to replenish their iron reserves. The seventh theme is about respectful maternal care, participants acknowledged the need for staff behavioural modification and attitudinal change so as to continue to attract women to utilize the maternity unit for skilled delivery care during pregnancy and childbirth. In the following section the main themes are discussed in greater depth and the emerging findings are considered with reference to the literature.

2) Consideration of the key findings in light of the evidence in the literature

To the best of my knowledge, this research project is the first in Nigeria to use cooperative inquiry approach, a form of action research to explore how midwives and obstetricians can contribute to the prevention of postpartum haemorrhage. Participants revealed the use of WHO (2018) PPH guidelines that focus on the use of uterotonic medications, and E-MOTIVE protocol, for prevention of PPH and affirmed their effectiveness. Similarly, in Nigeria, several research have been conducted to prevent PPH, using various types of uterotonic medications (Awoleke *et al*., 2020, Muhammad *et al.,* 2019, Ugwu *et al.,* 2016, Musa *et al.,* 2015, Badejoko *et al.,* 2012, Uthman *et al*., 2011). However, despite the use of uterotonic medications the incidence of PPH remains high in Nigeria. For example, current quantitative studies by Awoleke *et al*. (2020), who used misoprostol as a treatment for PPH, reported incidence of PPH of 11.2%; and Muhammad *et al.* (2019) who used misoprostol and oxytocin reported PPH incidence of 19.6% and 18.5%, respectively. In this current study, in addition to the use of uterotonic medications, participants worked towards preventing PPH through health education.

The *first theme*, health education, was the medium participants used to educate pregnant and postpartum women on various ways to prevent PPH. The information participants gave during health education and counselling empowered women and made them involved and participate meaningfully in preventing PPH. This finding resonates with research conducted in Nigeria by Kalu and Chukwurah (2022) and Okonofua *et al.* (2022) who reported the importance of health education to pregnant women for the prevention of PPH. Kalu and Chukwurah (2022) conducted a qualitative study and reported from interviews with midwives that they give health education to women during the different stages of pregnancy on how to prevent PPH. Okonofua *et al*. (2022) conducted a quasi-experimented study that revealed giving health education as one of the intervention components to pregnant women and their family members on preventing PPH which contributed to the success of their interventions. In contrast, in this current study participants provided health education to both pregnant and postpartum women. The importance of extending health education to include postpartum women is to give them information on things to do, such as diet and FP, that would help keep them healthy before entering into another pregnancy to prevent future episodes of PPH.

The *second theme* is nutrition in pregnancy. Participants identified anaemia as a risk factor for PPH which makes many women susceptible to PPH. Our finding is supported by other studies

conducted in Nigeria by Kalu and Chukwurah (2022), and Owolabi, Owolabi and OlaOlorun (2012) who reported anaemia as a vital risk factor for PPH. As there is dearth in literature based on research conducted in Nigeria, international research was examined. For example, studies from other African countries and India, reported anaemia as a risk factor for PPH and it is common problem among pregnant women in low-resource countries (Akter *et al.*, 2021, Gudeta, Regassa and Belay, 2019, Tulu, Atomssa and Mengist, 2019, Patel *et al.*, 2018, Tadesse *et al.*, 2017, Nair *et al.*, 2016). In contrast with the present study findings, research conducted in Nigeria by Okunade *et al.* (2024) in their prospective cohort analysis, reported that anaemia has no significant link with PPH. Although, PPH could occur in women with no known risk factors for PPH (Kalu and Chukwurah, 2022, Ngwenya, 2016), the findings of Okunade *et al.* (2024) could be attributed to the study population who mainly were well-educated, healthy pregnant women of high socio-economic status.

Nonetheless, participants in this study, who provide care for many indigenous women with financial constraints, found that the anaemia in pregnancy was mainly related to poor nutrition linked to poverty, because many women could not afford to buy food rich in iron and iron supplements. This finding concurs with the findings from a study by Owolabi, Owolabi and OlaOlorun (2012) who revealed that pregnant women of low socio-economic status who lack finance and formal education, have poor nutrition and an increased incidence of anaemia. Similarly, studies from Ethiopia, by Gudeta, Regassa and Belay (2019), and Tadesse *et al.* (2017) reported that anaemia is due to poor nutritional intake. However, the researchers did not relate the levels of anaemia to PPH, but Owolabi, Owolabi and OlaOlorun (2012) spelt out the consequence of anaemia in relation to poor pregnancy outcome such as impair oxygen to the foetus, intrauterine growth retardation.

To solve the problem of anaemia the participants in the current study focused on the importance of correcting anaemia before women go into labour. Therefore, participants took the action to educate women on the intake of nutrition rich in iron such as vegetables, fruits, crayfish, snails, and unripe plantain, and iron supplements to prevent anaemia and optimise their haemoglobin levels. Participants also educated women on the importance of preventing mosquito bites that cause malaria, and worm infections which would lead to anaemia. These findings resonate with the study by Kalu and Chukwurah (2022) who highlighted that treatment of anaemia is crucial during pregnancy, and correcting anaemia by recommending folic acid and iron, and

prophylactic treatment of malaria, and educating the women to take healthy diet so as to prevent complications of severe anaemia during childbirth. In addition, Gudeta, Regassa and Belay (2019) suggested the need for emphasis on maternal diet and intake of iron supplement during antenatal care as ways to reduce anaemia in pregnancy.

Furthermore, the participants reported that cultural beliefs and practices impact women's nutrition during pregnancy, such as forbidding pregnant women to eat food like snails rich in iron and other nutrients that would optimise their haemoglobin levels. This finding resonates with the study of Olonade *et al.* (2019), who reported that some Nigerian cultures forbid pregnant women to eat snails and eggs, which improves maternal blood and prevents anaemia. In the same vein, the study by Esienumoh, Akpabio and Etowa (2016) indicates that food taboos are often channels of malnutrition that leads to anaemia and make women susceptible to PPH. Similarly, a study by Adinma, Umeononihu and Umeh (2017) reported that food restrictions from food taboos result in poor intake of beneficial nutrition during pregnancy. Contrary to this current study, the quasi-experimental study by Teweldemedhin *et al.* (2021) in Eritrea revealed that food taboos and cultural factors did not prevent women from eating food items. In this current study, participants worked on changes in women's eating habits to prevent PPH, as the following theme addresses.

The *third theme* is the production of nutrition pictorial materials (NPM) to solve the cultural beliefs and practices, and ignorance of appropriate nutrition that impacts pregnant women's nutrition. The participants in this study planned together with the hospital Dietician to ensure that appropriate types of food items with food rich in iron are on the NPM to give women the choice of food that they can eat to address issues of cultural beliefs and practices and also, to correct anaemia, and optimise their haemoglobin levels. This study's findings reflect a quasi-experimental study by Sunuwar *et al.* (2019) at Tribhuvan University Teaching Hospital, Nepal, which reported significant improvement in the haemoglobin level of pregnant women in the intervention group compared to those in the control group after providing nutritional education and iron-rich food-based diet plan. Also, the quasi-experimental study by Teweldemedhin *et al.* (2021) in Eritrea revealed that using printed material and flip charts for pictorial representation during nutritional education/counselling, however, differs from this current study using NPM with a variety of food items to solve cultural issues that impact nutrition in pregnancy. However, no retrievable literature has produced material to solve

cultural beliefs and practices that impact nutrition in pregnancy. So, the production of NPM in this current study to help give women the choice of foods to eat to help them address cultural beliefs and practices that impact their nutrition during pregnancy is new and unique.

The *fourth theme* is financial preparedness for pregnancy and childbirth. The findings in this theme addressed how participants educated women to address their financial difficulties. Many women who attended the maternity unit were from a low socioeconomic group who had little or no money to buy food rich in iron and for their care during pregnancy and childbirth. This finding reflects several studies conducted in Nigeria that reported financial difficulty as one factor that makes it impossible for women to avail of skilled delivery care (in hospital) (Olawade *et al.,* 2023, Olonade *et al.,* 2019, Esienumoh *et al.,* 2018, Ntoimo *et al.,* 2018). In addition, Olawade *et al.* (2023), Esienumoh *et al.* (2018), and Ntoimo *et al.* (2018) related the poverty state of women as a contributory factor of maternal mortality. However, the researchers did not address how to solve the issue of poverty, although Ntoimo *et al.* (2018) suggested the need for socioeconomic empowerment of women. In this current study, participants took action to empower women by educating/counselling them to be self-reliant, by getting employment to earn money or by engaging in trade from which they can get some money. In addition, participants encouraged women to farm foodstuffs such as vegetables and plantain that would help them feed well to optimise their haemoglobin level and reduce spending costs.

Furthermore, concerning financial preparedness and preventing anaemia in pregnancy, Owolabi, Owolabi and OlaOlorun (2012) suggested the importance of improving women's socio-economic status through formal education and female economic empowerment. Equally, a study from Ethiopia by Gudeta, Regassa and Belay (2019) revealed that women with no formal education are more likely to develop anaemia compared to those with formal education. Thus, this suggests that women's education and empowerment are paramount because, in this current study, participants revealed from practice that PPH commonly occurs among teenagers and indigent women. Considering these findings, participants counselled women to save money gradually from their proceeds, either by using a small box or making local contributions (osusu[6]) for them to have additional money and make a change in their diet and nutrition,

[6] Osusu is a local contribution of an agreed amount of money collected daily by a group of individuals, and on rotational bases collect bulk money at the end of the month.

empowering them to become self-reliant and financially prepared adequately for pregnancy, labour, and childbirth. There is no known literature that supports the immediate findings.

The *fifth theme* is advocacy and powerlessness which are two interlinked factors that had the potential to impact maternity care providers' ability to prevent postpartum haemorrhage. The participants recognised the importance of advocacy to stakeholders and their involvement would assist with items needed to enhance the prevention of PPH. In terms of power, as is often the case with action research, the direction of the study was changed by participants as they felt powerless to initiate certain changes; and requested me an outsider to negotiate for the inadequacies on their behalf. I was not comfortable with the group request. Considering that power is shared with participants in AR (Casey, O'Leary and Coghlan, 2017), I suggested one other participant lead the group, but they considered that I, an outsider would achieve more; they trusted me being a neutral person, and a Reverend Sister. I lead the other participants to advocacy meetings with the hospital managers at the group's request. The advocacy meeting with the hospital managers brought about the achievement of changes, such as the promise to reactivate retraining (in-service training), to commence discussion in various departments on the need for behavioural modification/attitudinal change, and funds to produce NPM. The findings from this study corroborates the success reported by Okonofua *et al.* (2022) and Esienumoh, Allotery and Waterman (2018) in their respective studies. Okonofua *et al.* (2022) conducted a quasi-experimental study reported that the involvement of top leadership and stakeholders of the various study hospitals in Nigeria brought about the increase of the project effectiveness and sustainability. Similarly, Esienumoh, Allotery and Waterman (2018) in their qualitative study in a community in Nigeria highlighted that advocacy discussion with stakeholders assisted in the improvement of health and social infrastructures to prevent maternal mortality.

Also, I went to see the Commissioner of health and other government stakeholders on behalf of the group to negotiate for the SHIS to be brought to the hospital. Participants expressed that SHIS would greatly benefit women, as they will contribute as little as 50 Naira (Nigerian currency) (less than 5 cents) when they attend the antenatal clinic and would not be looking for money or pay out of pocket. Several studies conducted in Nigeria have revealed that the use of health insurance increased the utilization of maternal healthcare services (Ugbor, Agbutun and Ugbor-Kalu, 2021, Fantaye *et al.*, 2019, Dahiru and Oche, 2015). The study by Dahiru and

Oche (2015) reported that women's use of health insurance increased the utilization of maternal health care by 92%. Also, Oyeneyin *et al.* (2019) in their study demonstrated reduction in maternal mortality with the introduction of the Safe Motherhood Program, which included providing free maternal and child health service. Although the cited evidence in this section indicates that advocacy with stakeholders led to the realization of their request, the idea of co-participants in this study requesting me, an outsider, to lead the group to negotiate for items that would facilitate the care they provide is a unique finding. There is no retrievable literature in Nigeria's context about an outsider researcher being asked to negotiate with senior stakeholders and policy makers for things that would facilitate the provision of maternal services.

The *sixth theme* is Family Planning (FP) even though the study was about preventing PPH. Participants felt that FP is one way to mitigate PPH that arises from anaemia, which occurs with frequent delivery. The participants' proposal for promoting FP is to encourage women to replenish their iron reserves to prevent anaemia that can lead to PPH and anaemic heart failure and even death. So, participants took the action of advocacy for women to support FP to prevent PPH. Some studies from Nigeria support our findings on the use of FP to control size of family and spacing of children (Adefalu *et al.*, 2019, Ackerson and Zielinski, 2017, Johnson, 2017). On the contrary, Askew *et al.* (2024), in their paper on FP, state that the use of contraception has the benefit of improving maternal and newborn survival and health by preventing unintended pregnancies and unplanned births and preventing pregnancies and births that endanger women's lives. However, no retrievable literature links doing FP with the view of replacing lost stores of iron to correct anaemia, as we found in this study. This finding is new and unique.

Participants in this current study found that the issue of sex preference for a male child impacts FP uptake. These participants reported that women do not accept FP because their husbands desire to have a male child which puts pressure on the wife to continue giving birth to many children, even producing up to 5 or more in search of a male child, to please their husbands. Our findings are supported by studies from Nigeria by Akamike *et al.* (2020) and Adefalu*et al.* (2019), who reported that the uptake of FP depends on already having male children and many children. However, there was a lack of literature regarding sex preference in Nigeria as an impact on the uptake of FP.

In addition, participants revealed that few women expressed a preference for female children because their husband's desire for females was that female children would care for their parents in their old age. In order to resolve the issue of multiparity and sex preference, participants took action explaining to women why it was vital for them to adopt FP of their choice to prevent PPH and its complications. Equally important, participants educated women on the importance of educating and empowering their female children, because, from practice, participants noticed that PPH is common among teenagers and indigent women. So, educating and empowering the female child is of great importance, especially in the prevention of PPH and maternal mortality in Nigeria. Such education and empowerment would help women to take charge of their reproductive lives and have a voice to improve maternal care services in Nigeria and prevent PPH, which is a leading cause of high maternal mortality and morbidity in the country (Kalu and Chukwurah, 2022, Okonofua *et al.* 2022).

Participants acknowledged that FP services in Nigeria are expensive and would be out of reach of many indigent women (Akamike *et al*., 2020, Johnson 2027). Based on the suggestions of participants, the group then planned to get FP kits cheaper through advocacy to donors to attract women to use them. Research by Adebowale, Fagbamigbe and Bamgboye (2011) found similar issues over 10 years previously indicating that the high cost of contraceptives in Nigeria make it impossible for poorer women to afford. Inflation has increased since then, and the issue is even worse. Another study from Nigeria by Johnson (2017) revealed that the rate of contraceptive usage was highest among the richest women (26.0%) and lower among the poorest women (1.6%). So, the decision by the participants to look for a donor to provide FP kits which was considered a move in the right direction and will make a real change.

The *seventh theme* is about respectful maternal care, participants acknowledged the need for staff behavioural modification and attitudinal change so as to continue to attract women to utilise the maternity unit for skilled delivery care during pregnancy and childbirth. The need for behaviour modification of staff is important because if women are not well treated, they may discontinue their care in the hospital and go instead to receive care from unskilled birth attendants from where PPH often occurs. This finding is supported by qualitative studies conducted in Nigeria by Mohammed *et al.* (2022) and Ntoimo *et al.* (2019), who revealed that women experience abusive attitude and uneasiness when relating with some healthcare workers. Furthermore, Mohammed *et al.* (2022) found that the unpleasant behaviour of

healthcare workers could have been linked to pressure from busy workload. Similarly, participants in this current study attributed the issue of their behaviour to stress from heavy workload due to shortage of staff, though, participants acknowledged the need for behavioural modification. The issues of behavioural modification and staff shortage were some of the areas that the hospital mangers addressed during the advocacy meeting.

3) Action Research as the chosen methodology: Discussion on how AR enhanced this study and my experience of using cooperative inquiry framework within a maternity care hospital

The value of Action Research Methodology for this Research Study

On extensive review of the international literature this research study is the first study to date that adopted cooperative inquiry and an action research approach to work together with midwives and obstetricians to address the prevention of PPH in Nigeria. There were several advantages for me using AR methodology. One unique thing I noticed and found to be interesting about AR is that the researchers do not just identify issue(s) and leave it at that, the researchers (as in this study) go further to find solutions on how to solve the problem. The strength of this approach is that it facilitated the participating CI group members (midwives and obstetricians) a platform/framework to discuss the issues at hand in real time and provided structure to initiate actions in a bid to solve the practice problems identified together during the research. The approach allowed the active participation and involvement of midwives and obstetricians right at the coal face, on the field, those who have the experiences and how to prevent PPH. So, the midwives and obstetricians providing care experience what is happening regarding PPH and are in the position to talk about it and provide solutions to how to solve the problem. I allowed the participants to take charge, we worked together as a group which is vital in AR. That is why I believe that AR was the best methodology to answer the research question, because it allowed the participants who know the women more than I, an outsider, to share their experiences as the research was in progress. We all participated actively. We did not only gain new knowledge from using this research approach, we were also able to find solutions for the issues that emerged during practice and improved practice. The CI approach worked because of its flexibility which allowed us to work together on strategies to address issues regarding the cause and contributing causes of PPH that emerged during the research. We were therefore not restricted to follow pre-set questions, that would have blocked the unfolding of

real issues in the field. All these reasons made action research the most suitable methodology. So, for me these are the strengths of using AR.

The strength for AR for the participants, as they expressed, was that the research was interesting because all the data came from them, and that the research involved them and made them participate. Participants acknowledged that we all worked together, worked towards how to achieve our goal, to help women, and involved them in preventing PPH. They were motivated because they had a say, they had a voice. Participants shared that I did not impose the research on them, so they were able to participate actively and voluntarily. So, basically it was a bottom-up approach, it was democratic, they were involved in all the decisions, in all the actions, they guided the research, which are the true characteristics of action research. They were the ones who had the experience of preventing PPH.

Although I was not directly involved with women using the maternity care services, from what participants shared, the strength of using AR in research to address women's health issues was that the participants focused on how they could support the women to be involved in their own care, to prevent PPH. The participants got feedback from the women. For example, participants in encouraging women to save money, the women felt that they should, but many of them did not have money because of the harsh economic situation in the country; also, the women were interested as most of them expressed to the participants that they needed help, so the women took the suggestions on board. The participants expressed that the women were interested in using skilled birth attendants, but most of them had no finances. The women not having finances was one of the reasons participants requested that I assist the women by going to the government to bring the SHIS to the hospital, which will help women access care at reduced fees. It was interesting too about the culture practices and beliefs that participants indicate impact women's nutritional intake. The production of NPM is important because it gives women choices of food they could eat to optimise their haemoglobin level and to stay healthy during pregnancy and before childbirth.

Reflecting on my experience of using Cooperative Inquiry (CI) framework

It was amazing to set off on this research journey without knowing how it would turn out. So, I went in as the 'tool' to excavate the practical world/field. There was a starting point, which was the theoretical knowledge of preventing PPH and that of action research. However, I

worked together with participants as a team – co-researchers (CI group members) and allowed the reality on the field to unfold. My experience with action research is that we all participated actively; it differs from other research methodologies where the researcher mainly does all the research work and the participants contribute to the question asked, more of a 'question and answer' process. The approach I used excited all the participants, honestly discussing and working together and what I witnessed and experienced was fascinating. The whole dynamics within the group was very interesting. The information and ideas came from within the group; in other words, it was a very natural, organic and ground up approach. It was an amazing and impressive experience. I was surprised how they got engaged, which gave the group the energy needed to bring about the changes we achieved from the research.

4) A discussion on the limitations encountered and a series of recommendations that emerge from the research

This study sample size (n=9) could be considered as a limitation but following the cooperative inquiry framework used for this study, the sample size is within the acceptable sample size (n=2-20) for this research. Another limitation of this research study was that the researcher, one of the CI group members, carried out data analysis alone at the request of the other group members because of the busy nature of their work. Also, the researcher who was delegated by the other CI group members to negotiate for the SHIS for the hospital had not enough time to follow up the successful completion of the negotiation as the research was for academic purpose which is time-bound.

Recommendations

A key recommendation that has emerged from this study is that to reduce PPH, a multifaceted, multidisciplinary approach needs to be taken. Commitments from Midwives, Obstetricians, Managers and Staff from within individual organisations as well as senior managers and policy makers within the wider organisations and healthcare system are required to address the high postpartum haemorrhage ratio collectively. To focus solely on guidelines and policies will fail to address the socioeconomic and cultural issues that exist and therefore unlikely to reduce the current high percentage of maternal deaths from PPH in Nigeria.

The implication for clinical practice:

- Most of the evidence on prevention of PPH stems from research adopting a quantitative design. This current study is the first of its kind, adopting an action research approach that engaged directly with midwives and obstetricians on how best to reduce the incidence of PPH. Utilizing action research allowed for greater space to explore local cultural or organisation issues to be identified and actions undertaken that were previously unknown.
- The evidence from this study provides insights into midwives and obstetricians perceptions of what are the current obstacles and barriers to reducing PPH in one Nigerian maternity care setting, and gives a realistic and unique insight into the difficulties that exist for women, their families and maternity care providers.
- The findings indicate that the problem of PPH is more than just clinical, it is cultural issues, socioeconomic issues, political and it is important that healthcare professionals are aware of this.

The implication for Education:

1) There is a need for more frequent update of education for maternity care providers on the prevention of PPH and maternal morbidity and mortality.

- It would imply introducing a change in the curricular of midwives and obstetrician.
- There is need for frequent educational updates, based on the findings from this study a more action oriented approach is recommended: One day workshop/skills session tailored to focus specifically on the prevention of PPH, with midwives and obstetricians that includes information around the socioeconomic, cultural and local causes of PPH.
- A Journal club could be organised where updates on PPH guidelines and recommendations.

2) The need for healthcare professionals to educate, empower, and involve women and ask their opinion.

- Comment box could be made available at the antenatal clinics to give women opportunity to give feedback about the care they receive.
- Women could be invited back to talk about their experiences and have an input to the direction of future services.

- An advocacy group with local women that would provide an opportunity and space for discussion/education on issues affecting women's health during childbirth.
- Also, setting up opportunity/space to reflect on women's birth within the system, which could be once every two months.
- There could be an invitation to women for group reflection with midwives and obstetricians, or individual reflection.

3) Also, to educate policy makers about the importance of including maternity care providers such as midwives and obstetricians in changing practice.

- Through healthcare managers suggesting the inclusion midwives and obstetricians in changing practice.

4) The need to involve social and religious groups to educate their communities on the importance of using skilled birth attendants.

- Visiting social groups such as women clubs, market women meetings, town hall meeting days, to educate them on the importance of utilizing skill birth attendants for pregnancy and childbirth to prevent complication like PPH.
- Going to different churches and mosques to educate their congregation of the importance of using skill birth attendants for pregnancy and childbirth to prevent complications like PPH.

Recommendations for future research:

- Although this is a small study and the findings cannot be generalised, as it is specifically focused on maternity care in a hospital in Nigeria, the cultural issues identified impact women that migrate from Nigeria, and therefore the findings are relevant to other jurisdictions.
- As this is the first project of its kind, engaging directly with maternity care providers, undertaking a similar study in a different context (within Africa and in other continents) will help to generalise the findings for midwives and obstetricians working in different healthcare settings.
- Future research should consider supporting Nigerian women to give them voice which would entail applying for research funding within Nigeria from State government to include women's voice in the prevention of PPH.

- Seek funding for research from the WHO and other relevant organisations that provide financial support for research in developing countries like Nigeria.
- Future research in line with Sustainable Development Goals relevant to women's health.

Conclusion

The strengths of this research study are the numerous actions we were able to carry out to achieve the aims and the associated local contributing issues identified in section one of this chapter. More specifically, are the novel findings of the production of NPM to optimise women's haemoglobin levels by illustrating various food items which give women the choice of what food to eat and which also addresses cultural issues that impact nutrition in pregnancy. Also, participants advocate for women to do family planning to give them time to replenish their lost stores of iron before entering another pregnancy. Also, Cooperative Inquiry, a form of action research framework used for data collection, allowed participants to participate actively as co-researchers and co-participants, which made the group members claim ownership of the study, including the direction, which meant the outcomes had a greater impact on contextual factors contributing to PPH. This research project has demonstrated that preventing PPH requires a collective responsibility to solve identified issues in an ongoing manner. The prevention of PPH, especially in Nigeria, is paramount as it is one of the leading obstetric causes of maternal mortality and is the responsibility of stakeholders of all categories, namely, women and their spouses, healthcare providers, healthcare managers, and policymakers.

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Appendices

Appendix 1: Map of Nigeria

Figure 2:1 Nigeria Geo-Political Zones. Uploaded by Bakare Muideen O. (2015)

Appendix 2: Table 3. 1: Literature review search strings and results

Keywords	Database PubMed		CINAHL Plus		Embase		Web of Science	
	Numbers of articles identified in database	Numbers of articles selected reviewing the titles	Numbers of articles identified in database	Numbers of articles selected reviewing the titles	Numbers of articles identified in database	Numbers of articles selected reviewing the titles	Numbers of articles identified in database	Numbers of articles selected reviewing the titles
(Postpartum OR Post-partum) AND (haemorrhage* OR hemorrhage* OR Bleeding OR "blood loss") AND (Nigeria)	189	33	90	16	219	26	163	34
(Midwife OR midwives OR doctor* OR obstetrician*) AND (Postpartum OR Post-partum) AND (haemorrhage* OR hemorrhage* OR Bleeding OR "blood loss") AND (Prevent* OR stop* OR inhibit* OR hindrance* OR hinder* OR avoid*) AND (Nigeria)	13	5	7	1	17	7	1	1
(Postpartum OR Post-partum) AND (haemorrhage* OR hemorrhage*	377	21	215	10	647	28	342	16

OR Bleeding OR “blood loss”) AND (“Middle-income countries” OR “Low-income countries” OR “low-resource countries” OR “developing countries” OR “resource-limited countries”)								
(Midwife OR midwives OR doctor* OR obstetrician*) AND (Postpartum OR Post-partum) AND (haemorrhage* OR hemorrhage* OR Bleeding OR “blood loss”) AND (Prevent* OR stop* OR inhibit* OR hindrance* OR hinder* OR avoid*) AND (“Middle-income countries” OR “Low-income countries” OR “low-resource countries” OR “developing countries” OR “resource-	54	7	19	2	54	9	27	6

limited countries")								
(Midwife OR midwives OR doctor* OR obstetrician*) AND (Postpartum OR Post-partum) AND (haemorrhage* OR hemorrhage* OR Bleeding OR "blood loss") AND (Prevent* OR stop* OR inhibit* OR hindrance* OR hinder* OR avoid*)	500	34	133	11	629	24	342	18
Total	1,133	100	464	40	1,566	94	875	75

Appendix 3: Table 3.2: Summarized version of WHO (2018 p. ix) recommendations on the use of uterotonic medications for the prevention of postpartum haemorrhage (PPH)

Context	Recommendation	Category of recommendation
Efficacy and safety of uterotonics for PPH prevention	1.The use of an effective uterotonic for the prevention of PPH during the third stage of labour is recommended for all births. To effectively prevent PPH, only one of the following uterotonics should be used: • Oxytocin (Recommended 1.1) • Carbetocin (Recommended 1.2) • Misoprostol (Recommended 1.3) • Ergometrine/methylergometrine (Recommended 1.4) • Oxytocin and ergometrine fixed-dose combination (Recommendation 1.5)	Recommended
	1.1 The use of oxytocin (10 IU, IM/IV) is recommended for the prevention of PPH for all births.	Recommended
	1.2 The use of carbetocin (100 µg, IM/1V) is recommended for the prevention of PPH for all births in contexts where its cost is comparable to other effective uterotonics.	Context-specific recommendation
	1.3 The use of misoprostol (either 400 µg or 600 µg, PO) is recommended for the prevention of PPH for all births.	Recommended
	1.4 The use of ergometrine/methylergometrine (200 µg, IM/IV) is recommended for the prevention of PPH in contexts where hypertensive disorders can be safely excluded prior to its use.	Context-specific recommendation
	1.5 The use of a fixed-dose combination of oxytocin and ergometrine (5 IU/500 µg, IM) is recommended for the prevention of PPH in contexts where hypertensive disorders can be safely excluded prior to its use.	Context-specific recommendation
	1.6 Injectable prostaglandins (carboprost or sulprostone) are not recommended for the prevention of PPH.	Not recommended
Choice of uterotonics for PPH prevention	2. In settings where multiple uterotonic options are available, oxytocin (10 IU, IM/IV) is the recommended uterotonic agent for the prevention of PPH for all births.	Recommended
	3. In settings where oxytocin is unavailable (or its quality cannot be guaranteed), the use of other injectable uterotonics (carbetocin, or if appropriate ergometrine/methylergometrine, or oxytocin and ergometrine fixed-dose combination) or oral misoprostol is recommended for the prevention of PPH.	Recommended
	4. In settings where skilled birth attendants are not present to administer injectable uterotonics, the administration of misoprostol (400 µg or 600 µg, PO) by community health	Recommended

	workers and lay health workers is recommended for the prevention of PPH.	

IM: intramuscular; IU: international units; IV: intravenous; PO: orally

Appendix 4: Advertisement Poster

UCD School of Nursing, Midwifery and Health Systems
UCD College of Health and Agricultural Sciences

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Figure 3: **Invitation! Invitation! Invitation!** For Midwives and Obstetricians to volunteers to participate in a research project.

Invitation: Registered and licensed midwives and obstetricians with at least three months of working experience in the Maternity Unit. Including midwives and obstetricians who provide primary and supportive care during childbirth and postpartum periods.

Research Title: How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

Researcher: Esther Kpadamrophe Eyewumi Onokayeigho

Contact: email address: esther.onokayeigho@ucdconnect.ie

Phone number: +2349065530896

THANK YOU FOR RESPONDING.

Appendix 5: Participants Information Leaflet

UCD School of Nursing, Midwifery and Health Systems
UCD College of Health and Agricultural Sciences

Participant Information Leaflet

Research's name: Ms. Esther Kpadamrophe Eyewumi Onokayeigho

Name of University: University College Dublin (UCD)

Name of Researcher's School: School of Nursing, Midwifery and Health Systems.

The title of the research: How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

Invitation to Participants to participate in research.

I am inviting you to consider participating in this research project. Please carefully read the information provided about the project and what I am inviting you to do as a participant. This information provided to assist you make an informed decision as to whether you to participate in the project. If you need any more information or have any questions, please feel free to contact me (see contact detail subsequently). If you do decide to participate, please do sign the attached consent form.

What is the purpose of the research?

This research focuses on midwives and obstetricians' perceptions based on their experiences of preventing postpartum haemorrhage (PPH), which is one of the leading causes of maternal morbidity and mortality in Nigeria. To work together with midwives and obstetricians to identify any barrier to reducing PPH so that the group might take action to resolve the problem.

What type of research methodology will be used for this research?

The research will use an action research methodology. Action research focuses on solving practical problems through collaboration with other people with common interest to solve the problem and improve practice.

A cooperative inquiry is a form of action research. Cooperative emphasises the participation of everyone working together as co-researchers and co-participants, that is, research *with* people that have experience of the problem, planning and taking a collective decision on action to resolve it. Cooperative inquiry entails group members working together as co-researchers and co-participants through cycles of reflection and action. The process of data collection will be through series of five cooperative inquiry cycles, that is cooperative inquiry meetings that will stretch over a period of four months.

Why am I doing this research?

You have been approached to consider participating in this research project because you are a healthcare professional (midwives and obstetricians) who provides care and/or management to women during antenatal, intrapartum, and postnatal periods. In particular, for this study, we are very interested in your expertise and knowledge based on your experience of preventing of PPH. The overall objective is to work together to enhance actions and take steps that will further prevent maternal morbidity and mortality in the hospital.

How will your data be used?

Your data will be used to improve midwifery practice and for my Research Masters' thesis, presentations with midwives, obstetricians, midwife educators, policy makers. Also, subsequently, there will be publication of the outcome of the research nationally and internationally in journals and at conferences. The anonymized data will be stored for Five years to enable future use and shared with third parties with the permission of the researcher.

What will happen if you decide to take part in this research study?

Your shared experiences will enhance change and improve maternal healthcare services in the hospital.

How will I protect your privacy?

Your anonymity will be of priority, so there will be no form of identifier such as names, contact number, identification number, social status. Data will be collected by audio recorded and transcribed by the data controller and processor, the researcher, who will ensure anonymity of the data that is collected. Confidentiality cannot be guaranteed to individuals when working in groups, but it will be sought from the members of the inquiry meetings at each meeting. Each

participant will be asked to sign a confidentiality agreement at the onset of the study. The anonymised data will be made available to each group member during the inquiry meetings. The audio recorded data will be deleted before leaving Nigeria. The transcribed data will be anonymised, and the data file is will be encrypted and stored with a password protected, and will be kept securely locked in a lap-top.

Data Protection

Your right to protection and privacy and the protection of your data will be upheld in accordance the Nigeria Data Protection Regulation (NDPR) of 2019. The NDPR is in keeping with/similar to the UCD Data Protection Policy that is committed to the General Data Protection Regulation (GDPR) to protect right and privacy of individual involve in research in the European Nations (EU). You have the right to withdraw consent at any stage of the study and it will not affect processing of the data by contacting the Data controller and processor of this research Esther Onokayeigho, through the contact details at the end of this information leaflet. In accordance with NDPR processing is lawful if the Data Subject has given consent to the processing of his or her Personal Data for specific purposes, Section 2.2 (a). Your data will be collected and processed to address the aim of the study. Processing your data will also be valuable for scientific research, and public interest as the data will enhance maternal healthcare, Section 2.1 (1), (a) (i); 2.2 (e). The data will be stored for 5 years before it will be completely be destroyed. To ensure security, the data file will be encrypted and stored on data controller and processor the Researcher's personal UCD Google Drive, with secure password protection, only the researcher's supervisors will have access to the anonymised data for academic purposes. Being that the researcher is still studying in UCD, Ireland, it will be necessary to transfer the data to Ireland a foreign country to continue further processing. Thus, the researcher sorts your consent to transfer the data to Ireland, in compliance to NDPR Section 2.12 (a).

What are the benefits of taking part in this research study?

The benefits of taking part in this research is that the findings will help to improve practice and knowledge around the utility of PPH guidelines to further facilitate care for women attending your maternity services.

What are the risks of taking part in this research study?

There are limited risks associated with taking part in this study. Firstly, some Healthcare Professional may find recounting experiences of caring for women with PPH as a sensitive topic, if this is the case there will be opportunities given to take a break from the group discussion and to leave the meeting altogether. Secondly, you may find having to attend and participate in Five inquiry meetings inconvenient for you in your workplace, the researcher will make every effort to work with all group members to schedule the meetings on the best day for the group and will be able to offer a flexibility with the times.

Can I change my mind at any stage and withdraw from the research?

Participation in this research is entirely voluntary. You have the right to change your mind at any stage and withdraw from the study without giving reasons and there will be no penalty. You can withdraw by contacting the research Esther Onokayeigho, through the contact details at the end of this information leaflet. However, once your data has been analysed it cannot be withdrawn from the study.

How will I find out what happens with this project?

The findings of the research will be given to each group member. Also, I will use the findings for my thesis, which is the main intention for conducting this, and subsequently, publish some aspects of the findings.

Funding of this research project

This research is self-funding.

Contact details: Esther Kpadamrophe Eyewumi Onokayeigho
Phone Number: A phone number will be made available.
E- mail: esther.onokayeigho@ucdconnect.ie

Supervisors' names:

Dr Denise O'Brien **E- mail:** xxxxxxxxxxxxxx
Assoc. Prof. Barbara Coughlan **E- mail:** xxxxxxxxxxxxxx

Appendix 6: Participants Consent Form

UCD School of Nursing, Midwifery and Health Systems
UCD College of Health and Agricultural Sciences

Consent form for cooperative inquiry

The title of the research: How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?

Researcher's Name: Ms. Esther Kpadamrophe Eyewumi Onokayeigho

Phone Number: A phone number will be made available

E- mail: esther.onokayeigho@ucdconnect.ie

Participant's consent

Please tick the space provided

General Consent for Adult Participants

ADULT PARTICIPANT CONSENT FORM	
I consent to the following:	***Tick Yes***
I have read and understand the Information Leaflet. I have been given a copy of the Information Leaflet and to complete this consent form for my records.	
Do you feel you have been given sufficient information about the research to enable you to decide whether or not to participant in the research?	
Have you had an opportunity to ask questions about the research?	
Do you understand that your participation is voluntary, and that you are free to withdraw at any time, without giving a reason, and without penalty?	
Are you willing to take part in the research?	
Are you aware that the inquiry meetings will be audio recorded?	
Will you allow the researcher to use anonymized quotes in presentations and publications?	

Will you allow the researcher to transfer the anonymized data to Ireland a foreign country?	
Will you allow the anonymized data to be stored for Five years, to enable future use and sharing with third parties with the permission of the researcher?	

On the basis of what stated above, I/we AGREE to participate in this research project: Participant

NAME and SURENAME of the participant
……..

Phone number: ……,
Email……..*(used for keeping in contact during the research project)*

SIGNATURE …… DATE: ……../……/…….

Appendix 7: Consent Form to maintain confidentiality

UCD School of Nursing, Midwifery and Health Systems
UCD College of Health and Agricultural Sciences

Consent form to maintain confidentiality

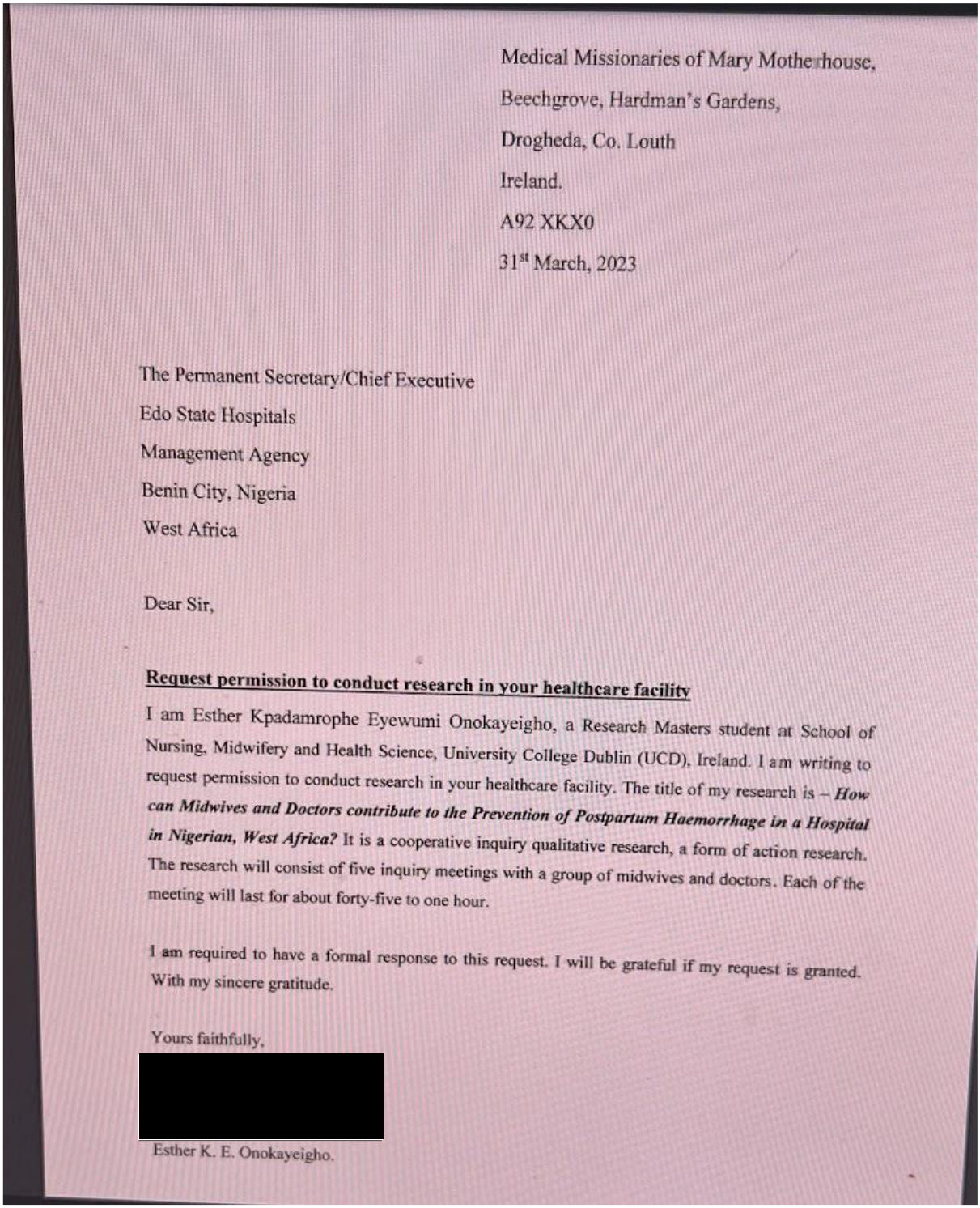
I agree not to discuss the content of the meetings outside the forum, so as to maintain confidentiality of the group.

NAME and SURNAME of the participant:

……

Signature: ……., Date: ……..

Appendix 8: Request to conduct research in a Maternity Hospital, Nigeria



Medical Missionaries of Mary Motherhouse,
Beechgrove, Hardman's Gardens,
Drogheda, Co. Louth
Ireland.
A92 XKX0
31st March, 2023

The Permanent Secretary/Chief Executive
Edo State Hospitals
Management Agency
Benin City, Nigeria
West Africa

Dear Sir,

Request permission to conduct research in your healthcare facility

I am Esther Kpadamrophe Eyewumi Onokayeigho, a Research Masters student at School of Nursing, Midwifery and Health Science, University College Dublin (UCD), Ireland. I am writing to request permission to conduct research in your healthcare facility. The title of my research is – ***How can Midwives and Doctors contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigerian, West Africa?*** It is a cooperative inquiry qualitative research, a form of action research. The research will consist of five inquiry meetings with a group of midwives and doctors. Each of the meeting will last for about forty-five to one hour.

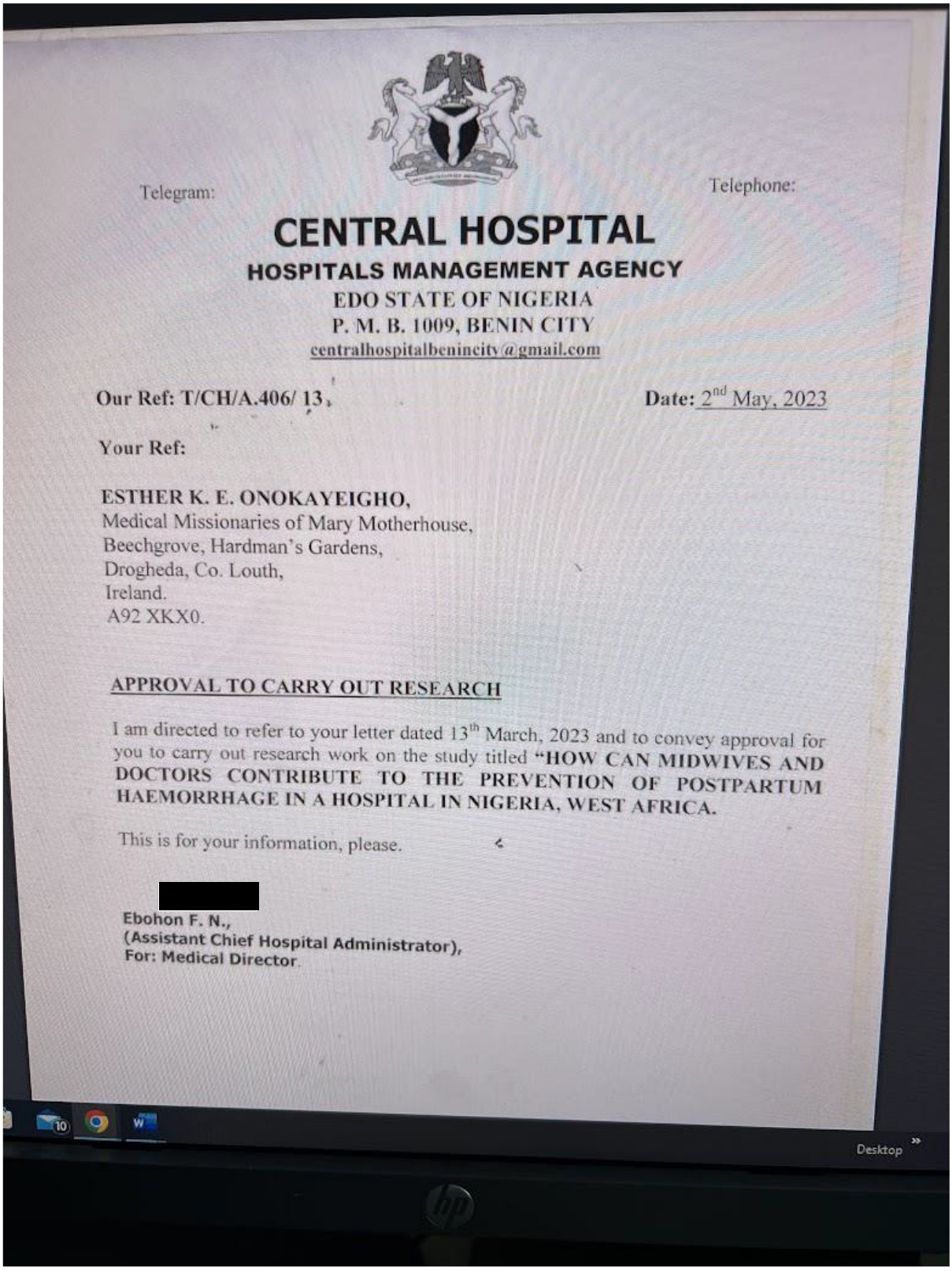
I am required to have a formal response to this request. I will be grateful if my request is granted. With my sincere gratitude.

Yours faithfully,

[redacted]

Esther K. E. Onokayeigho.

Appendix 9: Letter from the Maternity Hospital in Nigeria granting approval to conduct research



Telegram: Telephone:

CENTRAL HOSPITAL
HOSPITALS MANAGEMENT AGENCY
EDO STATE OF NIGERIA
P. M. B. 1009, BENIN CITY
centralhospitalbenincity@gmail.com

Our Ref: T/CH/A.406/ 13 **Date:** 2nd May, 2023

Your Ref:

ESTHER K. E. ONOKAYEIGHO,
Medical Missionaries of Mary Motherhouse,
Beechgrove, Hardman's Gardens,
Drogheda, Co. Louth,
Ireland.
A92 XKX0.

APPROVAL TO CARRY OUT RESEARCH

I am directed to refer to your letter dated 13th March, 2023 and to convey approval for you to carry out research work on the study titled **"HOW CAN MIDWIVES AND DOCTORS CONTRIBUTE TO THE PREVENTION OF POSTPARTUM HAEMORRHAGE IN A HOSPITAL IN NIGERIA, WEST AFRICA.**

This is for your information, please.

[redacted]
Ebohon F. N.,
(Assistant Chief Hospital Administrator),
For: Medical Director

Appendix 10: Ethics Committee of University College Dublin Approval to conduct research

From: research.ethics@ucd.ie <research.ethics@ucd.ie>
Sent: Thursday, June 1, 2023 4:20 PM
To: esther.onokayeigho@ucd.ie
Cc: 'Denise O'Brien' <denise.obrien@ucd.ie>; Barbara Coughlan <barbara.coughlan@ucd.ie>
Subject: LS-LR-23-126-Onakayeigho-OBrien Low Risk Study

Dear Esther

Thank you for your low-risk study submission to the Human Research Ethics Committee – Sciences (HREC-LS) which meets the criteria for a low-risk study with human participants only. Should the nature of your research change and thereby alter your low-risk status you should inform the Committee.

Please note for future correspondence regarding this low-risk study that your Research Ethics Reference Number is: **LS-LR-23-126-Onakayeigho-OBrien.**

This Low-Risk Study is approved by the HREC on the condition that you have provided accurate details of the study and that you will observe the following:

- **External REC Approval and/or Permission to Access/Recruit Human Participants/or their Data:** *(if applicable)* Please be aware that recruitment of participants or data collection should not begin until written permissions to access them are secured from external organisations/individuals/internal schools, colleges and units. **We note that you have provided a copy of the permission letter from the Central Hospital in the Edo State of Nigeria.**

- **Researcher Duty of Care to Participants:** please ensure that ethical best practice is considered and applied to your research projects. You should ensure that participants are aware of what is happening to them and to their data whether a study is de-identified or not. All researchers have a duty of care to their participants who have the right to be informed, the right to consent to participate and the right to withdraw from the study.

- **Please note** that HREC no longer process **insurance cover** on behalf of the researcher. Researchers are required to complete a self-assessment form from the UCD SIRC office – please see https://www.ucd.ie/sirc/insurance/humanresearchinsurance/ Please ensure that your insurance assessment is sent to the SIRC office.

Any additional documentation should be emailed to research.ethics@ucd.ie quoting your assigned reference number (provided above) in the subject line of your email.

All Low-Risk Studies are subject to a Research Ethics Compliance Review.

Regards

Jan

Janette Stokes

Research Ethics Officer

Office of Research Ethics (ORE)

W. www.ucd.ie/researchethics

Appendix 11: These are pictures from Cooperative Inquiry meetings, showing the enthusiastic group

Appendix 11a: Cooperative Inquiry meeting, participants engaging and teasing out issues

Appendix 11b: Cooperative Inquiry meeting, participants engaging in a relax and stress free enviroment

Appendix 11c: Cooperative Inquiry group at the end of the last cooperative inquiry meeting

Appendix 12: Nutritional Pictorial Material

Appendix 13: Letter to the Medical Director (Hospital Manager) to book Advocacy meeting

Medical Missionaries of Mary,
PO Box 853,
Benin City, Edo State
Nigeria, West Africa
3rd July, 2023

The Medical Director
Central Hospital
Benin City, Nigeria
West Africa

Dear Sir,

Advocacy

As part of the research on '***How can Midwives and Obstetricians contribute to the Prevention of Postpartum Haemorrhage in this Hospital,'*** which is ongoing, we, the cooperative inquiry group, choose advocacy as an aspect of health education we are currently addressing. Based on interaction and reflection with the group, the findings indicate that preventing and managing postpartum haemorrhage in this hospital requires a stakeholders' approach. Thus, the group is requesting to meet with you and the Management Team, and Head of the Department of Obstetrics and Gynaecology, the Head of the Department of Nursing and Midwifery, the Head of the Department of Medical Laboratory, the Head of the Department of Pharmacy, and Head of Social Services on how to tackle the problem and improve practice.

I look forward to getting your response with my sincere gratitude.
Yours faithfully,

[redacted]

Esther K. E. Onokayeigho (Initiating researcher)

Appendix 14: Invitation Letter to meet with Hospital Managers

CENTRAL HOSPITAL

EDO STATE HOSPITALS MANAGEMENT AGENCY
EDO STATE OF NIGERIA
P.M.B. 1096, BENIN CITY
centralhospitalbenincity@gmail.com

Our Ref: T/CH/A20/67 **Date:** 17th July, 2023.
Your Ref:

Esther K. E. Onokayeigho,
(Initiating Researcher),
Missionary of Mary,
P.O. Box 853,
Benin City,
Edo State.

RE: ADVOCACY

With reference to your letter dated 3rd July, 2023, on the above subject, I am directed to convey to you Management's approval for your organization's presentation on the Research Topic: 'How can Midwives and Doctors contribute to the prevention of Postpartum Haemorrhage in this Hospital' which is scheduled to hold as indicated below:

Date: Tuesday 18th July, 2023.

Time: 11am prompt.

Venue: Medical Director's Office Sickle Cell Centre, Benin City.

.....[redacted]
F.N. EBOHON (MRS.)
Asst. Chief Hosp. Administrator,
For: Medical Director

Appendix 15: Pictures showing Cooperative Inquiry group and Hospital Managers at intense delibration during an advocacy meeting

Appendice 15a and 15b: The group listening attentively as I presented our (Cooperative Inquiry Group) request of the items that would enhance prevention of Postpartum Haemorrhage in the hospital

Appendix 15b

Appendix 15c: Group picture of the Cooperative Inquiry Members and the Hospital Managers at the end of the advocacy meeting

Appendix 16: Requested Items from Hospital Mangers to enhance prevention of Postpartum Haemorrhage

Advocacy for Items that will assist Midwives and Obstetricians to contribute to the Prevention of Postpartum haemorrhage in the maternity unit of Central Hospital
18th July 2023.

Introduction

Good morning MD, the Management Team, HODs of the Different Departments and everyone present here. Thank you for allowing us, the cooperative inquiry group, to meet with you. I am Esther Onokayeigho, a Registered and Licenced Nurse/Midwife and a Registered Midwife Educator. I am currently conducting research in this hospital following an earlier approval. The Title of the Research is ***How can Midwives and Obstetricians Contribute to the Prevention of Postpartum Haemorrhage in a Hospital in Nigeria, West Africa?*** (in this hospital). The research is for my Research Master' Programme at University College Dublin, Ireland.

I am drawn to conduct this study because of the high maternal mortality in Nigeria. More specifically, a paper published in 2019 by Aikpitanyi, Ohenhen, *et al.*, indicates that postpartum haemorrhage was responsible for 55.5% of maternal mortality in this hospital. I then decided to utilize Cooperative Inquiry, a form of Action research a qualitative methodology that would facilitate working with midwives and obstetricians (the primary care professionals) on how we can prevent postpartum haemorrhage in this hospital.

Advocacy

Based on the interaction and reflection with the group, the findings indicate that preventing and managing postpartum haemorrhage requires a stakeholders' approach; hence we requested to meet with you to advocate for items that would enhance the provision of optimal maternal services. From the participants' work experience in the various clinical areas, they express advocacy for the following items that would assist them in contributing to the prevention/reduction of postpartum haemorrhage in this hospital:

1). Training and Retraining

- Resuscitating the training/academic exercises,
- Behavioural Modification and Attitudinal change of all the hospital staff to promote Respectful Maternity Care,
- Grand Rounds

2). Provision of:

- More staff and equipment,
- Effective Ambulance Services,
- Telecommunication for staff and clients, and pager/bleep for staff,
- Directional Signs for easy access for the clients to various points of services,
- Information, Education and Communication Materials for pregnancy and postpartum periods (Nutritional Pictorial Materials)

3). Tackling the bottleneck in the prevention of postpartum haemorrhage

4). A subsided pack system for pregnant women:

- Subsiding pregnant women medication and treatment,
- Normal delivery pack,
- Making haematinics free,
- A policy for the first 24 hours emergency treatment