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IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA-PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

by

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DECLARATION

Student Number: 13243854

I, **Makgoba Meldah Mokone**, declare that **Implementation of maternal guidelines to reduce preventable intrapartum deaths at a selected public hospital** is my own work and that all sources that have been used or quoted have been indicated and duly acknowledged by means of complete references, and that this work has not been submitted for any other degree at any other institution.

Mokone Meldah — Signed

01/10/2023 — Date

DEDICATION

This thesis is dedicated to my late brother, Mr. Louis Jack Mokone, who loved me unconditionally, believed in me, and taught me to be humble no matter my accomplishments. My brother Louis never lived to experience my academic achievements leading to my graduation as he was amongst the 21 people whom the roof collapsed on, but the only one who passed on while inspecting a building on the 5th of April 2007 in Lydenburg, Mpumalanga Province. May your soul rest in peace my dearest brother in heaven, Amen.

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ABSTRACT

IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRAPARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

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INTRODUCTION

Maternal death during pregnancy, childbirth, and the postpartum period is a tragedy with a catastrophic impact on families and serves as an important indicator of a health care system. More than one-third of maternal deaths occur during the intrapartum period and the majority of these deaths are largely preventable. Women continue to die from largely preventable causes despite global and national maternal care guidelines in place to reduce preventable maternal deaths. A preventable intrapartum death is a possible and probable potentially avoidable maternal death due to substandard care and missed opportunity. Reducing preventable intrapartum maternal deaths requires effective implementation of essential intrapartum guidelines such as monitoring of labour and childbirth, early identification of abnormalities, timely intervention, and treatment of complications.

AIM

The study aimed to determine the causes of preventable intrapartum maternal deaths, implement selected intrapartum maternal care guidelines, and evaluate the outcomes of the implemented guidelines at a selected public hospital in Gauteng province.

RESEARCH DESIGN AND METHODOLOGY

The researcher selected a sequential mixed methods research design and conducted the study in three phases. Using multiple approaches allowed the researcher to generate quality data and to gain an insight into the phenomenon under investigation.

Phase 1 involved the collection of quantitative data with the use of a PPIP tool to retrospectively audit the preventable intrapartum maternal deaths between January 2018 and December 2021 in the labour unit at the selected public hospital. In Phase 2, the researcher in collaboration with the midwives implemented specific intrapartum guidelines based on the findings from Phase 1. Implementation research is a scientific investigation into the processes and factors that influence the implementation of evidence-based programmes and policies in real-world situations (Mazzucca et al 2021:136; Peters et al, 2013). Implementation research prompts researchers to describe both the implementation strategy techniques used to promote implementation of the evidence-based intervention and the effectiveness of the intervention that was being implemented (Pinnock et al, 2017). The objective of implementation research is to improve the quality of care and health outcomes of patients by implementing guidelines or health care programmes. In Phase 3, a focus group interview was used to evaluate the outcomes of the implemented intrapartum guidelines to reduce preventable intrapartum maternal deaths. Qualitative content analysis of transcripts, interviews and reflective dairies was used during data analysis.

FINDINGS

Phase 1 found that a total of forty-eight intrapartum maternal deaths were potentially preventable. Obstetric haemorrhage (37.5% n=18) and hypertensive disorders (31.2% n=15) in pregnancy were shown to be the most common causes of preventable intrapartum maternal deaths. Using a bottom-up approach in Phase 2, the researcher and the midwives selected specific intrapartum maternal guidelines at a consensus workshop. The three specific maternal guidelines to be implemented throughout the intrapartum period were: use of the partogram, management of hypertensive diseases, and management of obstetric haemorrhage from retained placenta. The implementation phase lasted from February 2023 until June 2023. Phase 3 had three sections for evaluation of the outcomes of the implemented maternal guidelines, the individual narrative interviews and the focus group interviews. Using the PIPP audit tool, four (4) intrapartum maternal deaths that had happened during the implementation phase were audited. Two (2) intrapartum maternal deaths were preventable. A content data analysis was conducted on the 20 individual

narrative interviews. The interviews yielded four interrelated themes: (1) Adherence to selected intrapartum maternal care guidelines; (2) Improved decision-making, (3) Effective intrapartum maternal care guidelines, and (4) Barriers to effective implementation of the intrapartum maternal care guidelines. Using content data analysis, eleven themes emerged from the focus group interviews, namely (1) Available and accessible intrapartum maternal guidelines, (2) Value the multidisciplinary approach. (3) Support clinical evidence-based practice, (4) Relevant intrapartum maternal care guidelines, (5) Awareness of the use of evidence-based midwifery practice, (6) Dissemination of results from implemented intrapartum maternal care guidelines, (7) Engaging relevant stakeholders, (8) Adequate infrastructure, (9) Adequate staffing, (10) Availability of medical equipment and consumables, and (11) Clinical audits.

CONCLUSION

This study was conducted at a selected public hospital in Gauteng Province in South Africa. To improve clinical practice and intrapartum maternal care to achieve the best intrapartum patient outcomes, the researcher believes and hopes that this study will provide policymakers, clinical governance, midwives, nursing service managers, clinicians and other health care providers an insight into the significance of incorporating research into clinical practice.

Keywords: Implementation, guidelines, intrapartum, preventable maternal death, midwife, labour unit.

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LIST OF ABBREVIATIONS AND ACRONOMYS	
ABBREVIATION	**MEANING**
AIDS	Acquired Immune Deficiency Virus
ALT	*Alanine Aminotransferase*
ANC	Antenatal Care
ART	Antiretroviral Medication
BANC	Basic Antenatal Care
BP	*Blood Pressure*
CHC	Community Health Centre
CTG	Cardiotograph
CARMMA	Campaign for the Accelerated Reduction of Maternal Mortality in Africa
CHE	Council of Higher Education
DHIS	District Health Information System
EOST	Emergency Obstetric Simulation Training
ESMOE	Essential Steps in Managing Obstetric Emergencies
EBP	Evidence-Based Practice
ECG	Electrocardiogram
FIGO	Federation of Gynaecology and Obstetrics
CHEQ	Higher Education Quality Committee
HAART	Highly Active Antiretroviral Therapy
HELLP	Hemolysis, Elevated Liver enzymes and Low Platelets
HPCSA	Health Professions Council of South Africa
HIV	Human Immunodeficiency Viruses
ICM	International Confederation Midwifery
ICU	Intensive Care Units
IUCD	Intrauterine Contraceptive Device
LDH	Lactate Dehydrogenase
PMD	Preventable Maternal Death
MD	Maternal Death
PMTCT	Prevention of Mother to Child Transmission
MAMMAS	Maternal Morbidity and Mortality Audit System
MCWH	Maternal, Child and Women's Health

MDNF	Maternal Death Notification Form
MDRS	The Maternal Death Surveillance and Response
LIST OF ABBREVIATIONS AND ACRONOMYS	
ABBREVIATION	**MEANING**
MgS04	Magnesium sulphate
MMR	Maternal Mortality Rate
MOU	Midwife Obstetric Unit
M&M	Morbidity and Mortality meetings
NDoH	National Department of Health
NCCEMD	National Committee for Confidential Enquiries into Maternal Deaths
NDP	National Development Plan
NVD	Normal Vaginal Delivery
NQF	National Qualification Framework
OMBU	On-site Midwife Birthing Units
PCC	Person Centred Care
PIH	Pregnancy Induced Hypertension
PHC	Primary Health Care Clinic
PMD	preventable maternal death
PPH	Postpartum Haemorrhage
PPIP	Perinatal Problem Identification Programme
RSA	Republic of South Africa
SANC	South African Nursing Council
TB	Tuberculosis
TOP	Termination of Pregnancy
UNFPA	World Bank Group, and the United Nations Population Division
SDG 3	Sustainable Developmental Goal Three
UNICEF	United Nations Children Emergency Fund
WHO	World Health Organization

CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Maternal death during pregnancy, childbirth and the postpartum period is a tragedy with a devastating effect on the newborn and the whole family and serves as an important indicator of a health care system (Collier & Molina 2019:e562). Maternal mortality refers to the death of a woman while pregnant or within 42 days after delivery or after termination of the pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management (World Health Organization [WHO] 2018:57; National Department of Health [NDOH] 2015:16). Globally, over one third of maternal deaths occur during the intrapartum period and the majority of these deaths are largely preventable. Intrapartum refers to the period from the commencement of true labour, characterised by painful uterine contractions, until the first hour after childbirth (WHO 2018:3). To reduce preventable intrapartum maternal deaths requires the effective implementation of essential intrapartum guidelines, such as monitoring of labour and childbirth, early identification of abnormalities, and timely intervention, and treatment of complications (WHO 2020:1; Baharuddin, Amelia, Suhowatsky, Kusuma, Suhargono & Eng 2019:62).

1.2 BACKGROUND

Most maternal deaths are preventable. In order to end preventable maternal mortality, accurate information on how many women died, where they died and how they died is essential. In 2013, the WHO launched the Maternal Death Surveillance and Response (MDSR) guidance to strengthen notification, review, and response to maternal deaths (WHO, 2013). In 2015, the United Nations (UN) developed and adopted the Sustainable Developmental Goals (SDGs) as a shared blueprint for peace and prosperity for people and the planet. Sustainable Development Goal 3 (SDG 3) is “good health and well-being”, and target 3.1 is to reduce the global maternal

mortality ratio (MMR) by 2030 to less than 70 per 100,000 live births, with no countries surpassing 140 per 100,000 live births (WHO 2015:6). Improving the quality of care around the time of birth has been identified as the most impactful strategy for reducing preventable intrapartum maternal deaths compared to antenatal or postnatal care (WHO 2020:1). The Maternal Death Surveillance and Response (MDRS) system is a continuous surveillance linking the health information system and quality improvement processes at local to national level (Mathai, Dilip, Jawad & Yoshida 2015:54).

Every maternity department should establish a Maternal Deaths Response and Surveillance Committee consisting of midwives and doctors who meet to analyse and discuss the causes of each maternal death (NDOH, 2020). The objective of the morbidity and mortality meetings (M&M) is to determine whether the maternal death could have been avoided and, based on the gaps identified, to develop a quality improvement plan to improve maternal health care services. The development of essential intrapartum guidelines and their implementation are part of the standards to improve both maternal and neonatal outcomes. A preventable intrapartum death is a possible and probable potentially avoidable maternal death due to substandard care and missed opportunity (NDOH 2020:20).

Available international intrapartum care initiatives include the WHO *Maternal death surveillance and response: technical guidance* (2013), WHO *Strategies towards ending preventable maternal mortality (EPMM)* (2015), WHO *Recommendations on intrapartum care for a positive childbirth experience* (2018), and WHO *Labour Care Guide* (2020). National initiatives include the National Department of Health (NDOH) *Essential steps in managing obstetric emergencies (ESMOE)* (2012), NDOH *Guidelines for maternity care in South Africa: a manual for clinics, community health centres and district hospitals* (2015) and NDOH *Saving Mother 2017-2019: Report on the confidential enquiries into maternal death in South Africa* (2020). The goal of the WHO (2015) strategies and the NDOH (2015) guidelines was to end all preventable maternal deaths. Despite a significant reduction in the maternal mortality ratio (MMR) and global and national maternal care guidelines to prevent preventable maternal deaths, women continue to die from largely preventable causes (Mathai, Dilip, Jawad & Yoshida, 2015).

A review of studies on maternal mortality before and after the Covid-19 pandemic in Mexico, Peru, Uganda, South Africa, and Kenya found disparities in vulnerability and fragility within and between the countries, individuals and health systems (Calvert, John, Nzvere, Cresswell et al

2021:2). During the Covid-19 pandemic, there was an increase in maternal mortality (Calvert, John, Nzvere et al 2021:2). In 2017, the global maternal mortality ratio (MMR) was estimated at 211 maternal deaths per 100,000 with a high MMR of 415 maternal deaths per 100 000 live births in the least developed countries, which was over 40 times higher than the MMR of 10 maternal deaths per 100,000 live births in Europe and almost 60 times higher than the estimated 7 maternal deaths per 100,000 live births in Australia and New Zealand (WHO 2019:12).

According to the WHO (2019:13), Sub-Saharan Africa and Southern Asia accounted for approximately 86% of the estimated global maternal deaths in 2017, with sub-Saharan Africa accounting for roughly 66% and Southern Asia for nearly 20% of maternal deaths. In their study in Dar es Salaam, Tanzania, D'Mello, Bwile, Carmone, Kalaris, Magembe, Masweko, Mtumbuka, Mushi, Sellah and Gichanga (2020:3) found that the main causes of intrapartum maternal deaths included obstetric haemorrhage, hypertensive disorders such as pre-eclampsia and obstructed or prolonged labour, human error or mismanagement, with the majority being preventable intrapartum deaths. Although maternal deaths in Kigali, Rwanda decreased from 1,071 deaths per 100,000 live births in 2000 to 210 maternal deaths per 100,000 live births in 2015, it was still far from the national target of less than 140 maternal deaths per 100,000. Overall, 65% of maternal deaths were considered preventable, with the causes of preventable intrapartum deaths ranging from obstructed or prolonged labour, obstetric haemorrhage, hypertensive disorders such as pre-eclampsia, to facility, diagnostic, therapeutic, and human error or mismanagement (Benimana, Small & Rulisa 2018:6). Although there were intrapartum guidelines available to direct clinicians, including midwives, in the execution of care to prevent unnecessary maternal morbidity and mortality, the growing prevalence of preventable intrapartum maternal deaths remained a public issue (Benimana, Small & Rulisa 2018:6).

In a review of 90 maternal deaths in 11 hospitals in Indonesia to determine the factors contributing to hospital-based maternal deaths, Baharuddin, Amelia, Suhowatsky, Kusuma, Suhargono and Eng (2019:62) found that 90% of the deaths were classified as preventable and occurred mostly in the intrapartum period. The findings indicated that direct obstetric causes, such as severe pre-eclampsia and eclampsia, health worker factors, such as shortage of staff (88%), clinical decision making (77%) and lack of monitoring (76%), and administrative factors (30%) and patient factors (21%) were more frequent than supply, facility, or infrastructure factors (Baharuddin, Amelia, Suhowatsky et al 2019:63). Comprehensive patient assessment, diagnosis, clinical decision making, planning and management of the women, using evidence-based practice, is crucial for

the safety and outcomes of childbirth and can significantly decrease preventable intrapartum deaths.

A positive childbirth experience is one that fulfils or exceeds a woman's prior personal and sociocultural beliefs and expectations, including giving birth to a healthy baby in a clinically and psychologically safe environment with continuity of practical and emotional support from healthcare providers who are skilled, knowledgeable and technically competent (International Federation of Gynaecology and Obstetrics [FIGO] 2014:95; WHO 2018:1). Midwives should engage in continuous professional development to maintain their midwifery competency and provide evidence-based midwifery practice to decrease intrapartum deaths. According to Malesela (2016:7), competent midwives exhibit strong diagnostic reasoning skills that are crucial in the prevention of preventable maternal death during intrapartum care. The Nursing Act, 33 of 2005, section 31(1) (b) describes a midwife as licensed person who is registered with the South African Nursing Council based on the completion of a recognised education and training programme to assist and treat the client who can be the woman, neonate or a family in the process of promoting a health pregnancy, labour and postpartum period.

The National Department of Health (NDOH) guidelines for maternity care (2015) and report on the confidential enquiries into maternal death in South Africa (2020) emphasise maternal health care as a priority area requiring urgent action in South Africa. This motivated the researcher to explore whether the WHO and NDOH guidelines are implemented effectively. Research is needed on the implementation of intrapartum guidelines to reduce preventable maternal deaths. The study therefore wished to describe the causes of preventable intrapartum maternal deaths and implement intrapartum Maternity Care Guidelines to reduce preventable maternal deaths at a selected public hospital in Gauteng province.

1.3 PROBLEM STATEMENT

The death of women during pregnancy, childbirth and puerperium remains a major public issue, (Moodley, Fawcus & Pattinson 2018:s4). Ending preventable maternal death (PMD) remains an unfinished agenda and one of the world's most critical challenges despite significant progress (WHO 2015:2). Although maternal deaths worldwide decreased by 45% between 1990 and 2015, 800 women still die each day from largely preventable causes before, during and after the time of giving birth (WHO 2015:2). Potential preventable maternal death usually indicates either poor

maternal health or inadequate care during pregnancy, intrapartum and puerperium (Cook & Sprague 2019:1768). A reduction in maternal mortality has traditionally been used as a critical measure of progress in improving maternal health. The Maternal Mortality Ratio (MMR) is an important indicator of a country's status (Cook & Sprague 2019:1769). The global MMR from 2000 to 2017 was 211 per 100 000 live births (WHO 2019:16). The MMR for South Africa for the 2017-2019 triennium was 113.8, 123.14, and 148.55 maternal deaths per 100 000 live births, respectively (NDOH 2020:56). The major underlying causes of preventable maternal deaths were anaesthetic related (93.3%), obstetric haemorrhage (89.5%), pregnancy-related sepsis (76.4%), ectopic pregnancy (75.2%), hypertensive disorders in pregnancy (70.6%), and miscarriage (64.9%) (NDOH 2020:34). According to the Saving Mother Report, the major underlying causes remain unchanged since the inception of the National Committee for Confidential Enquiries into Maternal Deaths (NECCEMD) in 1998 (NDOH 2020:6).

The Maternal Mortality Ratio (MMR) at the selected public hospital in 2020 was 145 maternal deaths per 100 000 live births, which is higher than the national target that should be achieved by 2030. The reasons for preventable intrapartum maternal deaths were documented at the hospital, which made it is essential to investigate whether and/or how well the intrapartum guidelines were being implemented.

To achieve SDG 3, the NECCEMD recommends the Basic Antenatal Care (BANC) guidelines, Guidelines for maternity care in South Africa, the use of the partogram and the Essential steps in managing obstetric emergencies (ESMOE), which are targeted at reducing maternal and neonatal morbidity and mortality rates during pregnancy, labour and puerperium.

Between 2018 and 2021, 132 maternal deaths were documented at the selected public hospital (Hospital Maternal Deaths and Births Register, 2022). The hospital had a high rate of patient safety incidents such as fresh stillbirths and preventable maternal deaths (Hospital Maternal Deaths and Birth Register, 2022). The study's main focus was on intrapartum maternal deaths that could have been avoided. The hospital's maternal deaths record showed that only patient diagnoses were used to document avoidable intrapartum maternal deaths. As the researcher found no information on the causes that led to avoidable intrapartum maternal deaths, she sought to audit the patient files of the maternal deaths at the hospital. All public health sectors should take action to reduce preventable intrapartum maternal deaths, which calls for the effective implementation and ongoing evaluation of essential intrapartum guidelines.

To achieve the best intrapartum outcomes requires a multidisciplinary approach, which should include the doctors and midwives holding perinatal meetings to discuss all maternal deaths that occur in a health facility. The purpose of such perinatal meetings is to identify the factors that contribute to each intrapartum maternal mortality. Three preventable factors, namely the patient, medical health care worker, and institutional or administrative factors, are used to reach consensus. In this study, the researcher aimed to identify the causes of preventable intrapartum maternal deaths, and examine the implementation and evaluation of maternity guidelines at the selected public hospital in Gauteng province.

1.4 SIGNIFICANCE OF THE STUDY

A research study should be significant to the nursing profession and contribute to the body of knowledge (Brink, van der Walt & van Rensburg 2012:61).
Examining and describing the causes of preventable intrapartum deaths and the implementation of intrapartum guidelines should contribute to reducing the avoidable intrapartum maternal deaths at the selected hospital. The findings should benefit the midwifery profession and education in raising awareness that adherence to intrapartum guidelines reduces preventable maternal deaths. The recommendations of the study for effective implementation of intrapartum guidelines should benefit and guide policy makers, hospital management, obstetric and midwifery managers, and clinical governance to consider the factors needed for successful implementation of intrapartum strategies to improve maternal and neonatal health outcomes. The study will add value to the midwifery profession and education in raising awareness that adherence to intrapartum guidelines could reduce preventable maternal deaths at public hospitals.

1.5 AIM AND OBJECTIVES

The aim of the study was to implement intrapartum guidelines to reduce preventable maternal deaths at a selected public hospital in Gauteng province.

1.5.1 Objectives of the study

In order to achieve the aim, the objectives were to:

- Determine the factors contributing to preventable intrapartum maternal deaths at the selected public hospital.
- Implement intrapartum Maternity Care Guidelines to reduce preventable maternal deaths at the selected public hospital.
- Evaluate the outcomes of the implemented intrapartum Maternity Care guidelines to reduce preventable maternal deaths at the selected public hospital.

1.5.2 Research questions

The study wished to answer the following questions:

- What are the factors contributing to preventable intrapartum maternal deaths at the selected public hospital?
- What intrapartum Maternity Care Guidelines can be implemented to reduce preventable maternal deaths at the selected public hospital?
- What were the outcomes of the implemented intrapartum Maternity Care Guidelines to reduce preventable maternal deaths at the selected public hospital?

The study was conducted at a selected public hospital in Gauteng province, South Africa. Tertiary hospitals render specialist and sub-specialist care to a number of regional hospitals and serve as a platform for training of health care workers and research.

1.6 SETTING

The study setting or context is the location where the study is conducted and data collection takes place (Burns, Grove & Gray 2017:353; Polit & Beck 2017:743). The study was conducted at a selected public hospital in Gauteng province, South Africa. It is a tertiary public hospital that serves a large population to an estimate of 2.5 million. It is a tertiary hospital that render specialist and sub-specialist care to a number of districts, regional hospitals and serve as a platform for training health care workers and research (NDOH 2016:17). The interest was on determining the causes of preventable maternal deaths and the implementation of the intrapartum guidelines to reduce preventable maternal deaths.

There is no district or regional hospital within the catchment area where the selected public

hospital is situated. For health services to operate effectively, different levels of healthcare are

needed and most medical conditions do not need the facilities of large hospitals (NDOH 2016:17). Clinics and district, secondary, tertiary and central hospitals should split the patient care workload for cost-effective health management, with clinics handling common and low-risk issues and hospitals handling more challenging clinical entities. A referral system that clearly defines the management procedures, referral patterns, transportation requirements, and duties of the various types of health professionals must be in place (NDOH 2016:17).

The selected public hospital has a busy maternity department and receives referrals from 34 local clinics, two community health care centres, and three midwife obstetric units, and has a high-risk antenatal care clinic. The most common high-risk patients admitted at the hospital include medical conditions, such as asthma, diabetes, and epilepsy, and obstetric conditions include hypertensive disorders in pregnancy such as pre-eclampsia, obstetric haemorrhage such as placenta praevia and placenta abruption. The hospital has a high rate of patient safety incidents such as unconducted deliveries, fresh stillbirths and preventable maternal deaths (Hospital Maternal Births and Death Register, 2021). Most patient safety incidents are a result of infrastructural and staffing challenges as this is the only hospital within the catchment area.

The hospital has approximately 45 normal deliveries per day (Hospital Births Register, 2021). The Obstetrics Department has two post-natal wards, namely the post-natal normal vaginal delivery and caesarean section. The antenatal ward has 40 beds and the labour ward has 22 beds: 4 for the labour admission, 10 for labour delivery, and 8 high care beds. The post-natal NVD and post caesarean section wards have 40 beds, respectively, which are the normal vaginal delivery and postnatal caesarean section. The Obstetrics and Gynaecology Department has 117 midwives/accoucheurs, 55 enrolled nurses, and 20 auxiliary nurses. The labour ward admissions, labour ward delivery area, labour ward high care, antenatal ward and the postnatal wards nurses work either day shift or night shift which is a 12-hour shift, namely 7am to 19 pm day shift or 19pm to 7am night shift. The nursing staff work 160 hours per month. In the labour ward, the nurse-patient ratio is 1 to 15 patients per shift on average. The maternity department has 11 consultants, 12 medical registrars, 10 specialist registrars and 14 medical internship doctors. These doctors cover both the Maternity and Gynaecology Department. The maternity section has four doctors, one allocated in labour ward, two in theatre and the consultant does the overall supervision. The doctors allocated in the labour unit work from 07h00 in the morning until 07h00 the next morning, which is a 24-hour shift.

1.7 PARADIGM AND PHILOSOPHICAL ASSUMPTIONS

A paradigm is a world-view or a way of looking at natural phenomena that encompasses philosophical assumptions and that guides one's approach to enquiry (Polit & Beck 2020:571; Brink, van der Walt & van Rensburg 2018:19). Polit and Beck (2021:571) add that paradigms are lenses that help to sharpen the researcher's focus on a phenomenon. Assumptions are principles that are accepted as true based on logic or reason, without proof (Polit & Beck 2020:572).

In this study, the researcher adopted pragmatism as the research paradigm. Pragmatism is a worldview or a set of assumptions about how things work; a basic set of beliefs that guide action (Creswell 2014:35). Pragmatism believes that reality is constantly renegotiated, debated, interpreted, and therefore the best method to use is the one that solves the problem. Pragmatism falls between positivism and interpretivism since it employs both objective and subjective criteria (Al-Ababneh 2020:81). The researcher considered pragmatism ideal to examine the causes of preventable intrapartum maternal deaths and the effective implementation of international and national intrapartum guidelines and protocols at the selected hospital. Pragmatism is underpinned by ontological, epistemological, methodological and theoretical.

1.7.1 Ontological

Ontology is the study of being or reality and refers to the way individuals perceive life (Richards 2003:33; Gall, Gall & Borg 2003:13). Pragmatists believe that reality is not static and that it changes with events (Al-Ababneh 2020:81). Accordingly, the researcher examined various perspectives and maternity guidelines to reduce preventable intrapartum maternal deaths. In Phase 1, the researcher collected objective, numerical data by auditing the files of preventable intrapartum maternal deaths to determine the causes of the deaths in order to select specific guidelines for implementation in the selected public hospital (Al-Ababneh 2020:86). In Phase 2, the researcher collected qualitative data from the participants on their experiences (Al-Ababneh 2020:86). This allowed the researcher to interact with the participants and construct their reality during the implementation of the maternity guidelines to reduce preventable intrapartum maternal deaths. The findings were mutually created within the context through value-bound research (Maarouf 2019:2).

1.7.2 Epistemological

Epistemology is concerned with the nature of knowledge, its possibility, scope and general basis. Epistemology refers to the way individuals understand reality from what they know and what is observed through interaction with the environment (Polit & Beck 2012:13). Epistemology studies the nature of knowledge and the process by which knowledge is acquired, validated and communicated to others (Makombe 2017:52). The researcher believed that knowledge could be obtained using questionnaires. The researcher believed that auditing the relevant patient files would provide insight into and knowledge of the causes of preventable intrapartum maternal deaths at the selected hospital. Engaging with the participants during the implementation of the maternity guidelines in Phase 2 and evaluating the outcomes of the implementation in Phase 3 would help reduce preventable intrapartum maternal deaths.

1.7.3 Methodological

Methodology is a strategy or plan of action that links methods to outcomes and governs researchers' choice and use of methods and the process of the research (Polit & Beck 2020:10). Methodological assumptions refer to how the researcher will gain knowledge from the participants (Polit & Beck 2020:10; Makombe 2017:52). Methodological assumptions cover the research design and methodology of the study.

The researcher selected a mixed method research design that is qualitative and quantitative in order to answer the research questions and achieve the objectives of the study. This fitted well with pragmatism's assumptions about how things work; a basic set of beliefs that guide action (Al-Ababneh, 2020:1; Polit & Beck 2020:10). This enabled the researcher to implement maternity guidelines at the selected hospital and evaluate the effectiveness thereof in reducing preventable intrapartum maternal mortality.

1.7.4 Rhetorical

Rhetorical assumptions concern the language of research (Al-Ababneh 2020:86).This entails the personal voice. In this study, the quantitative findings were presented as statistics and the

qualitative findings were presented as themes from the interviews supported by quotations from participants.

1.8 CONCEPTUAL FRAMEWORK

A framework is “an abstract, logical structure of meaning” (Gray, Grove & Sutherland 2017:24). A conceptual framework deepens understanding of the phenomenon under study and is crucial for knowledge on the phenomenon (Polit & Beck 2020:183). According to Polit and Beck (2020:183), a conceptual framework consists of a set of propositions about the interrelationships among concepts, arranged in a logically interrelated system that permits a new statement to be deduced from them.

This study was guided by the WHO quality of care framework for maternal and newborn health (Tuncalp, Were, MacLennan, Oladapo, Gülmezoglu et al 2015:1046). The researcher chose this framework because quality maternal health care should lead to improvement in clinical processes that should yield good intrapartum outcomes. This framework guided the researcher in selecting essential maternity guidelines that were implemented to reduce preventable intrapartum maternal deaths at a selected public hospital in Gauteng province. Figure 1.1 depicts the WHO quality of care framework for maternal and newborn health.

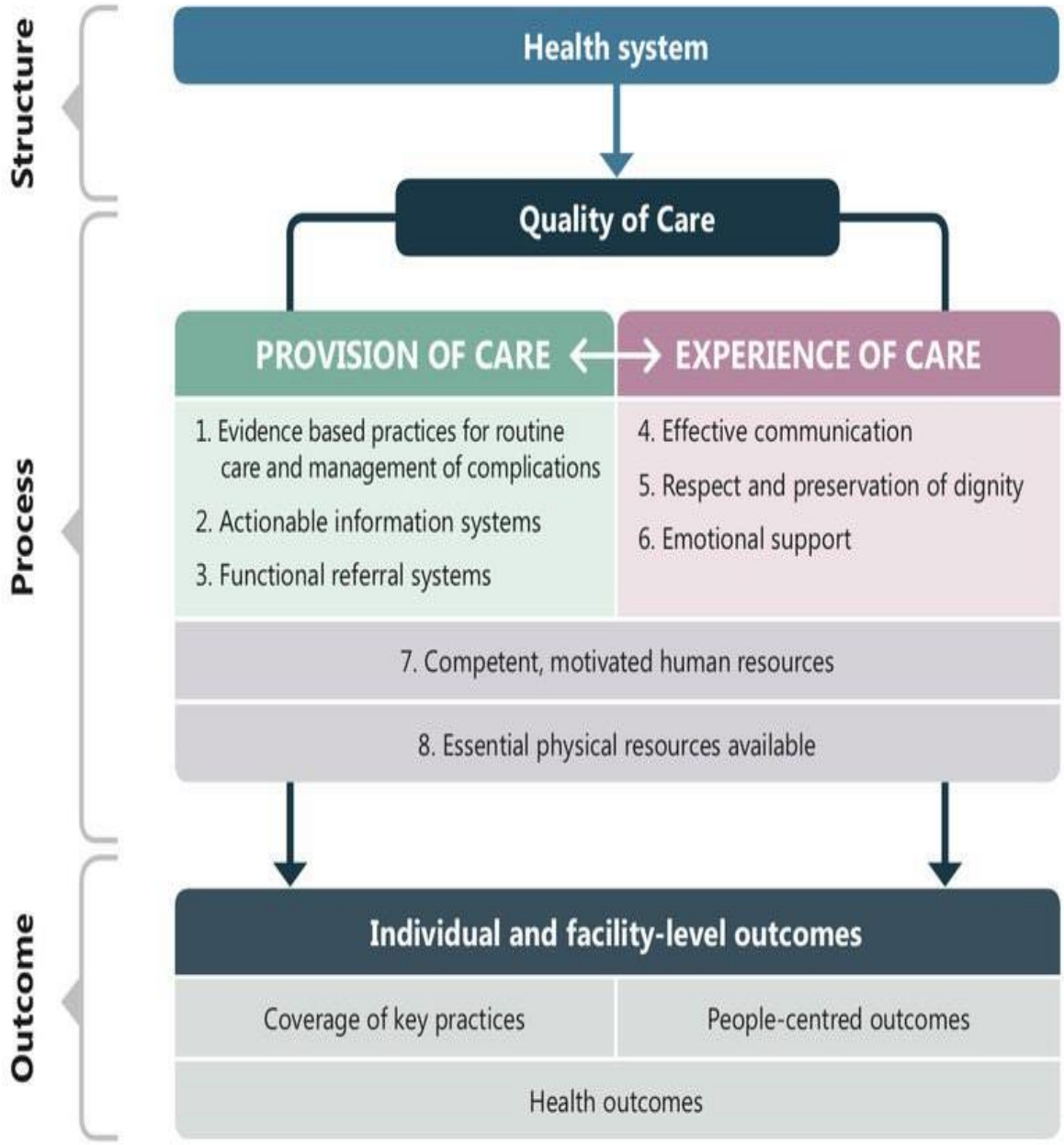

Figure 1.1 WHO quality of care framework for maternal and newborn health

Source: Tuncalp, Were, MacLennan, Oladapo, Gülmezoglu et al (2015:1046)

The WHO quality of care framework for maternal and newborn health indicates that the quality of care is drawn from three categories, namely structure, process and outcomes. According to the WHO (2015), quality of care is the extent to which health care services provided to individual and

patient populations achieve desired health outcomes. The quality of care plays an important role, which entails that to achieve maximum intrapartum outcomes, all categories should be equally considered during the provision of care. The WHO quality of care framework illustrates how the health system provides the structure in which care is provided, the provision and experience of care are important components of the process of care, and the outcome comprises both the individual/people-centred facility-level outcomes (Borhen, Titiloye, Kyaddondo, Hunter et al 2017:5).

According to the WHO quality of care framework for maternal and newborn care, in order to achieve the best intrapartum outcomes from the midwife, the first prerequisite is an appropriate infrastructure where care will be provided, including material resources such as medical equipment to execute duties. The process includes comprehensive assessment, special investigation, planning and implementation of maternity guidelines that are evidence-based practice (EBP), and evaluation to achieve best maternal and neonatal outcomes, including prevention of maternal deaths. Polit and Beck (2017:76) define EBP as an integration of current best evidence with clinical expertise and patient preferences in making clinical decisions, with clinical problem-solving strategies that de-emphasise decision-making based on custom.

The process further requires the midwife to be skilled and competent to deliver evidenced-based care during the intrapartum period to achieve best outcomes. Midwives should engage in continuous training to maintain their competency levels, to exhibit strong diagnostic reasoning skills and reliable clinical judgement to provide quality intrapartum care which would assist in decreasing preventable intrapartum maternal deaths (Malesela 2016:6).

1.9 RESEARCH DESIGN

A research design is a set of logical steps taken by the researcher to answer the research questions (Brink, van der Walt & van Rensburg 2018:187). A research design is the overall plan for addressing a research question, including the specifications for enhancing the integrity of the study (Polit & Beck 2020:164). In this study, the researcher selected a mixed method research design. Mixed method studies collect and analyse qualitative and quantitative data to answer questions (Dawadi, Shrestha & Giri 2021:25, Polit & Beck 2017:164; Shorten & Smith 2017:74). Mixed method studies are conducted when researchers want to generate quality data using

multiple approaches to acquire more insight into the phenomenon under investigation (Makombe 2017:3373; Al-Ababneh 2020:88).

The researcher considered a mixed method research design appropriate to generate quality data, acquire deeper insight, and evaluate the findings (Al-Ababneh 2020:88; Makombe 2017:3373; Sileyew 2019:1; Polit & Beck 2017:167). Accordingly, the researcher conducted the study in phases. Phase 1 audited patient files to collect quantitative data to determine the causes of preventable intrapartum maternal deaths at the selected public hospital. The maternal mortality ratio formula was reported numerically. Phase 2 collected qualitative data from the implementation of intrapartum guidelines at the hospital. Phase 3 was qualitative and further evaluated the outcomes of the implemented intrapartum guidelines. The research design and methodology are discussed fully in chapter 3.

1.10 RESEARCH METHODOLOGY

Research methodology is the plan for conducting the specific steps of a study. Research methods are the techniques or tools researchers use to collect, structure and analyse data systematically (Polit & Beck 2020:741). The research methodology includes the population, sample and sampling, data collection, analysis and interpretation, and ethical considerations.

The study was conducted in three phases (see chapter 3 for full discussion of the research methodology).

1.10.1 Phase 1: Audit of preventable intrapartum maternal deaths

The purpose of the study was to implement maternity guidelines at a selected public hospital in Gauteng province to reduce preventable intrapartum maternal deaths. To contextualise the study and to determine the causes of preventable intrapartum maternal deaths at the selected public hospital, the researcher retrospectively audited the patient files in Phase 1. Phase 1 was quantitative and entailed auditing records related to preventable intrapartum maternal deaths using Perinatal Problem Identification (PPIP) as clinical audit tool. The researcher purposively selected patient files of women who died from preventable intrapartum causes. Purposive

sampling enabled the researcher to obtain in-depth information (Burns, Grove & Gray 2017:255).

To be included in the study, the preventable intrapartum maternal deaths must have occurred between 1 January 2018 and 31 December 2021 in the labour unit at the selected public hospital. The selected public hospital had 132 maternal deaths between 2018 and 2021, of which 57 maternal deaths occurred during the intrapartum period. Fifty-seven intrapartum maternal death patient files recorded in the hospital deaths register were retrieved, audited and analysed. In Phase 1, data was analysed using descriptive statistics. Forty-eight maternal deaths were potentially preventable.

1.10.2 Phase 2: Implementation of Maternity Care Guidelines to reduce preventable intrapartum maternal deaths

In Phase 2, the researcher in collaboration with the midwives implemented specific intrapartum guidelines based on the findings from the Phase 1 audit which were the factors contributing to preventable maternal deaths in the specific unit. Implementation research is a scientific investigation into the processes and factors that influence the implementation of evidence-based programmes and policies in real-world situations (Mazzucca, Arredondo, Hoelscher et al 2021:136; Peters, Adam, Alonge, Agyepong & Tran, 2013). Implementation research prompts researchers to describe both the implementation strategy techniques used to promote implementation of the evidence-based intervention and the effectiveness of the intervention that was being implemented (Pinnock, Barwick, Carpenter, Eldridge et al, 2017).

The objective of implementation research is to improve the quality of care and health outcomes of patients by implementing guidelines or health care programmes. In this study, the implementation of the maternity guidelines was done over a period of five months, February 2023 to June 2023. The researcher planned and implemented the maternity guidelines in collaboration with the midwives working in the labour ward at the selected public hospital. The midwives were informed about the outcomes of phase 1 which determined the causes of preventable intrapartum maternal deaths. The results were presented at a consensus workshop. The researcher received buy-in from the workgroup members who included the midwives, shift leaders and maternity unit managers to ensure continuity and sustainability of the implementation of the intrapartum guidelines to reduce preventable maternal deaths (see chapter 3 for detailed discussion of phase 2). Full description of the implementation plan and activities of the Maternity Care Guidelines during the intrapartum is presented in Chapter 5 of this study.

1.10.3 Phase 3: Report on the outcomes of the implemented maternity guidelines to reduce preventable intrapartum maternal deaths

Phase 3 of the study evaluated the implemented intrapartum guidelines at the selected public hospital to reduce preventable maternal deaths. Following the six-month implementation phase, the outcome of the implementation (Phase 2) was evaluated. The population in Phase 3 consisted of experienced midwives, midwives, operational managers and assistant managers working in the labour ward of the selected hospital. The researcher purposively selected the midwives and advanced midwives who met the inclusion criteria and voluntarily consented to participate in Phase 3.

Data was collected by re-auditing the patient files of the intrapartum maternal deaths at the selected public hospital to evaluate the outcomes of the implemented intrapartum guidelines. Four intrapartum maternal deaths occurred during the implementation phase were re-audited using the PPIP audit tool. Focus group interview was used to evaluate the outcomes of the implemented intrapartum guidelines to reduce preventable intrapartum maternal deaths. Qualitative content analysis of transcripts, interviews and reflective dairies was used during data analysis. The researcher transcribed the interviews verbatim, individual narrative interviews as well as the reflective dairies of the workgroup members as well as the researchers' personal reflective dairy. The individual narrative interviews consisted of 20 participants. Four sessions of focus group interviews were held consisting of 7 to 9 participants which lasted about 40 minutes. Qualitative content analysis was used to analyse the data collected in Phase 3 (see chapter 3 for full discussion). The report of the outcomes of the implementation of the Maternity Care Guidelines is fully presented in Chapter 6 and Chapter 7.

1.11 RIGOUR AND TRUSTWORTHINESS

Rigour minimizes bias and ensures control over variables under study (Polit & Beck 2020:558). Rigour requires a researcher to ensure a systematic approach to the research design and an awareness of the importance of interpretation rather than reliance on assumptions or perceptions (Brink, van der Walt & van Rensburg 2018:82). Rigour is a way by which reliability or trustworthiness is assured in any research finding.

Researchers achieve rigour in qualitative studies by ensuring trustworthiness of the data collected (Polit & Beck 2020:558). Trustworthiness is "the degree of confidence that qualitative researchers have in their data, using the strategies of credibility, dependability, confirmability, transferability and authenticity" (Polit & Beck 2017:558). Trustworthiness forms the basis for continued social and economic interactions, and is also fundamental for cooperation, fairness, honesty, and other forms of prosocial and moral behaviour (Kumar, Capraro & Perc 2020:1). Validity and reliability ensured the quality of data collected in Phase 1 of the study. The researcher ensured trustworthiness in Phases 2 and 3 using the criteria of credibility, confirmability, transferability, dependability and authenticity (Polit & Beck 2017:559-560).

Credibility was achieved with prolonged engagement and member checking by the researcher during data collection. The researcher was the moderator during the focus group interviews, probed and asked for clarification of concepts among the participants. Confirmability was ensured through the use of audiotapes and field notes to support the data from participants. Transcribed data and field notes were sent to an independent coder who is an expert in qualitative research to ensure that the findings expressed the participants' views and that data saturation was reached. Transferability was achieved by providing a dense description of the research methodology, study setting, sample characteristics and sampling methods, and data collection and analysis. The researcher ensured dependability by examining the data and listening to the audiotapes to ensure that the results are grounded in the data. The raw data was coded, audited and archived to permit checking of the findings. Authenticity was achieved by using an audio recorder to capture the interviews, which were also sent to the independent coder.

1.12 DEFINITIONS OF KEY TERMS

For the purposes of the study, the following terms were used as defined below.

- **Implementation**

  Mazzucca, Arredondo, Hoelscher et al (2021:136) describe implementation as a scientific enquiry of the processes and factors that influence the integration of evidence-based programmes and policies in real-world settings. In this study, implementation referred to the implementation of intrapartum guidelines to reduce preventable maternal deaths at the selected hospital.

- **Guidelines**

Guidelines are evidence-based practices that guide the team in making management decisions, clarify care team roles, reduce the occurrence and consequences of medical errors, and promote team communication (Owens 2021:6-7). In this study, guidelines referred to the NDOH 2015 maternity guidelines in South Africa, the partogram and Essential Steps in Managing Obstetric Emergencies (ESMOE) to reduce preventable intrapartum maternal deaths at the selected hospital.

- **Intrapartum period**

Intrapartum refers to the period from the commencement of regular uterine contractions through the first, second and third stage of labour (NDOH 2015:46). In this study, the intrapartum period referred to the period from the first stage of labour to completion of the third stage of labour.

- **Preventable maternal deaths**

Preventable maternal deaths are possible and probably avoidable deaths, caused by either substandard care rendered by health care workers, or healthcare system and factors related to the behaviour of the woman (Moodley, Fawcus & Pattinson 2018:s6). In this study, preventable maternal death referred to a maternal death that occurred during the intrapartum period at the selected hospital and could probably have been avoided.

- **Midwife**

A midwife is a person registered in terms of Section 31 of the Nursing Act, 33 of 2005, who promotes, maintains, restores and supports the health status of a woman and her child during pregnancy, labour and the puerperium (SANC, 2005). In this study, a midwife referred to a person registered with the South African Nursing Council (SANC) working at the labour unit at the selected hospital.

- **Labour unit**

A labour unit refers to a section in a maternity hospital where women are admitted from the first, second and third stage of labour (*Concise Oxford Dictionary* 2008:1627). In this study, the labour unit consisted of the labour ward admission area, the birthing rooms, which include the first, second and third stage labour cubicles at the selected hospital.

1.13 ETHICAL CONSIDERATIONS

Ethics deals with matters of right and wrong. When humans are used as study participants, care must be taken to ensure that their wellbeing and rights are protected (Polit & Beck 2017:138; Burns, Grove & Gray 2017:170). The ethical standards for nurse researchers published by the Democratic Nurses Organisation of South Africa (DENOSA) in 1998 serve as a framework for nurses conducting and participating in research. Therefore, the researcher obtained permission and ethical clearance to conduct the study, and observed the ethical principles of respect for human dignity (self-determination), anonymity, privacy and confidentiality, beneficence, and justice.

- **Ethical clearance and permission**

The researcher obtained written ethical clearance and permission to conduct the study from the Departmental Inhouse Committee (see Annexure A) and Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria (see Annexure B).

Letter requesting permission to conduct the research study at the selected public hospital letter was sent to Gauteng Department of Health (Annexure C) and written permission was granted by Gauteng Department of Health and the Chief Executive Officer at the selected public hospital in Gauteng Province (see Annexure D).

- **Respect for human dignity**

The principle of respect for human dignity includes the right to self-determination and full disclosure (Polit & Beck 2020:60). The principle of self-determination means that participants have the right to decide voluntarily whether to participate in a study, without risk of prejudicial treatment. The researcher informed the participants of the nature and purpose of the study, that participation was voluntary and there was no reward for participation or penalty for not participating, and that they could withdraw from the study at any time should they wish to do so. The participants were allowed to ask questions. The participants were given information leaflets, which also contained the researcher's contact details. Each participant signed two consent forms: one to participate in the study and another to allow the researcher to record

and write field notes during the interviews (see Annexure E and Annexure F). The participants signed the informed consent forms before participation.

- **Anonymity, privacy and confidentiality**

  The participants were assured of anonymity, privacy and confidentiality. The research study was not intrusive and participants' privacy was maintained at all times. The interviews and focus group interviews were guided by the research objectives and questions and conducted in a private venue. The participants were referred to by numbers and no names provided, which ensured confidentiality. The researcher assured the participants that all information provided would be treated with strict confidentiality and would only be available to the researcher and her study supervisor. Using numbers and no names ensured that no information could be linked to any participants. The researcher kept all the audio-recorded data and written transcripts locked in a cabinet to which only she had access.

- **Beneficence**

  The principle of beneficence imposes a duty on researchers to maximize benefits and to minimize harm to participants and others (Polit & Beck 2020:61). The principle of beneficence includes the right to freedom from harm and discomfort and to protection from exploitation (Polit & Beck 2020:61). The researcher ensured that the participants were not exposed to any discomfort or harm, whether physical, psychological, emotional, spiritual, or social. In addition, the researcher made arrangements for any participants who might feel uncomfortable during the focus group interviews to be referred to the Staff Wellness Clinic at the hospital.

- **Justice**

  The principle of justice includes the right to fair treatment and privacy (Polit & Beck 2020:62; Gray, Grove & Sutherland 2017:173). The researcher treated all the participants with respect and fairly (Burns, Grove & Gray 2017:172). During the study, the researcher

treated the participants fairly and equally, and ensured that all participants were given an equal chance to contribute in the focus group interviews.

1.14 LAYOUT OF THE STUDY

The study consists of seven chapters:

Chapter 1	Orientation to the study
Chapter 2	Context of the study
Chapter 3	Research design and methodology
Chapter 4	PHASE 1: Article: What went wrong? Enquiry into the Causes of Preventable Intrapartum Maternal Deaths at a selected public Hospital in Gauteng Province, South Africa
Chapter 5	PHASE 2: Implementation of Maternity Car Guidelines to reduce preventable maternal deaths
Chapter 6	PHASE 3: Outcomes of the implementation of Maternity Care guidelines: Individual narrative interviews
Chapter 7	PHASE 3: Outcomes of the implementation of intrapartum Maternity Care Guidelines: Focus group interviews
Chapter 8	Conclusions, strength & limitations, and recommendations

1.15 CONCLUSION

This chapter described the background to the study and problem, the aim and objectives, research design and methodology, and ethical considerations of the study.

Chapter 2 presents the context of the study, including the national context, South African health care system, historical perspective and health challenges, the training and legislation of nurses and midwives, maternity care in South Africa, disease profiles of pregnant women and the current strategies to reduce maternal deaths in the South African health context.

CHAPTER 2

CONTEXT OF THE STUDY

2.1 INTRODUCTION

Chapter 1 provided an overview of the study, outlined the background to the problem, the aim and objectives, research design and methodology, and ethical considerations. This chapter describes the context of the study, including the national context, South African health care system, historical perspective and health challenges, the training and legislation of nurses and midwives, statutory body for medical doctors in South Africa, maternity care in South Africa, disease profiles of pregnant women, and the current strategies to reduce maternal deaths in the South African health context.

2.2 NATIONAL CONTEXT

South Africa is situated at the southern tip of Africa, and forms part of the greater Sub-Saharan region of Africa. With over 60 million people, South Africa, officially the Republic of South Africa (RSA), is the second most populated country south of the equator after Tanzania. The RSA is the world's 23rd-most populous nation and covers an area of 1,221,037 square kilometres, which is 471,445 square miles (Statistics SA [Statssa] 2021:5). South Africa is bordered by Namibia, Mozambique, Botswana, Lesotho and Eswatini (formerly Swaziland) (Statssa 2021:5). South Africa is divided into nine provinces, namely Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North-West, and Western Cape (see Figure 2.1). The provinces are further divided into metropolitan and district municipalities. District municipalities are further sectioned into local municipalities. All municipalities are divided into smaller units called wards. The Northern Cape is South Africa's largest province while Gauteng is the most populous, with Johannesburg as the largest city in the country (see Figure 2.1). The

country has three capital cities, Pretoria, Cape Town, and Bloemfontein serving as the executive, legislative, and judicial capitals of the country, respectively.

Gauteng is the most populated province, with approximately 15.2 million people (25,8%) living there; KwaZulu-Natal is the second most populated, with approximately 11.3 million people (19.2%), and the Northern Cape is the least populated, with approximately 1.26 million people (2.2%) (Statssa 2021:5). Half of the population live in rural areas and some in informal settlements.

Figure 2.1 Map of South African provinces and provincial capitals

Source: Statistics SA (2021:4)

2.3 SOUTH AFRICAN HEALTH CARE SYSTEM

The historical perspective, general context, current challenges and other aspects are discussed next.

2.3.1 Historical perspective

The governance of South Africa's healthcare system has been both vertically and horizontally fragmented throughout its history, with resources poorly managed, and after 1948 focused primarily on supporting an apartheid government rather than promoting health and providing an efficient and effective health service (Katuu 2018:136). Prior to 1994, South Africa's health system was segregated along ethnic groups, with one system benefiting the white minority and the other being systematically under-resourced and serving the black majority (Katuu 2018:136; Omotoso & Koch 2018:7). In a study on the South African health system, Delobelle (2013:160), described South Africa as a society characterised by huge inequities, rooted in the political history of the country, with a devastating effect on the health status of the largely black African population. During the apartheid era, from 1948 to 1993, health care services were severely fragmented and the provision of health care services had a discriminatory impact on the four racial groups: blacks, coloureds, Indians and whites (Baker 2010:79). During that period, the South African health system was influenced by professional, political, and financial interests, which hindered equal distribution and led to inequalities in service delivery among regions and population groups.

In 1996, two years after the repeal of Apartheid, the South African Government passed the Constitution of the Republic of South Africa Act, 108 of 1996 with a Bill of Rights in chapter 2. In terms of Section 27(1) of Chapter 2 of the Bill of Rights, every person has the right to access healthcare services in South Africa, including the right to reproductive care, and no one may be refused emergency medical treatment. The Constitution stipulates that the South African Government must put policies in place to effectively implement programmes to ensure access to high-quality healthcare. In 2001, the National Department of Health introduced the national policy on quality in health care to provide a way to improve the quality of care in both the public and private sectors. The policy sets out the main objectives of government to assure quality in health care and to continuously improve the care being provided (NDOH, 2001).

2.3.2 General context

Delivery of quality health care is a constitutional obligation in South Africa (Stuckler, Basu & McKee 2011:165 cited in Maphumulo & Bhengu 2019:1). The National Department of Health is responsible for overseeing healthcare in South Africa. There are public and private clinics and hospitals in South Africa. South Africa has a two-tiered, and highly unequal, healthcare system. The public sector is state-funded and caters to the majority (71%) of the population. The private sector is largely funded through individual contributions to medical aid schemes or health insurance, and serves around 27% of the population. There is a significant gap between public and private healthcare facilities in much of the country due to funds and the best specialists moving to the private sector.

In 2013, there was an estimated 56% vacancy rate for doctors and 46% for nurses in the public health sector and only 3% of newly qualified doctors worked there (Britnell 2015:75). The private sector is largely funded through individual contributions to medical aid schemes or health insurance. The majority of the population are taken care of by the public health services. The delivery of healthcare services is under the control of the national Department of Health, provincial health departments, and municipal or district health departments. Municipal administrations manage district hospitals and primary care clinics, while provincial health agencies oversee regional and tertiary hospitals. Although 70% of doctors work in the private sector, all medical training is done in the public sector. In many countries, only about 10% of the medical professionals are qualified (Britnell 2015:75). Table 2.1 lists a breakdown of South Africa's hospitals and clinics in 2014.

Table 2.1 Breakdown of hospitals and clinics in South Africa, 2014

HOSPITALS AND CLINICS IN SOUTH AFRICA, 2014					
Province	**Public clinics**	**Public hospitals**	**Private clinics**	**Private hospitals**	**Total**
Eastern Cape	731	91	44	77	883
Free State	212	34	22	13	281
Gauteng	333	39	286	83	741
KwaZulu-Natal	592	77	95	12	776

Limpopo	456	42	14	10	522
Mpumalanga	242	33	23	13	311
North West	273	22	17	14	326
Northern Cape	131	16	10	2	159
Western Cape	212	53	170	39	474
Total	**3863**	**407**	**610**	**203**	**5083**

Source: Makombo (2016:6)

2.3.3 Current challenges

Since South Africa's democratic transition, much time and effort have gone into addressing the adverse effects of Apartheid, which was dominated by institutionalised inequality. Although South Africa has a progressive Constitution that protects human rights and the rights of all citizens to access quality healthcare, there are still concerns in providing better care (Maphumulo & Bhengu 2019:9). The South African government has implemented initiatives and programmes to improve health care, efficiency, safety, and quality of service, as well as access for all users. At the same time, there have been major challenges in health policy and legislation to ensure compliance in delivering quality care (Moyakhe 2014:80 cited in Maphumulo& Bhengu 2019:1). The current inequality in health is closely related to the former socioeconomic, racial and political disparities, and social inequities. Despite continued government efforts to redress the imbalances of the past, limited progress has been made towards achieving the health Sustainable Developmental Goals (SDGs).

The large and under-resourced public health sector is burdened by urban-rural inequalities in access to health care and a quadruple burden of disease, including HIV/AIDS and non-communicable diseases (NCDs), violence and injuries (Delobelle 2013:161). Although progress has been made, South Africa has not yet achieved the SDGs. Public hospitals and clinics in South Africa are usually reasonably well equipped and staffed, but are often overcrowded with patients, and long waiting times. The Government has therefore introduced several developments and programmes to improve health care, efficiency, safety and quality of delivery and access for all users (Mogashoa & Pelser 2014:142). Changes have also been made in health policy and legislation to ensure compliance in delivering quality care (Morake 2014:80).

According to Maphumulo and Bhengu (2019:1), the challenges of quality improvement in South Africa's health care indicate that many qualities improvement programmes had been initiated, adapted, modified and then tested but did not produce the desired required level of quality service delivery. The quality of public health care appears to have declined in the last decade. The quality of care in South African public hospitals is mainly affected by infrastructural issues and shortages of both material and human resources. Delobelle (2013:161) found that underfunding, mismanagement, shortages of health personnel and deteriorating infrastructure were contributory factors. The migration of health care workers from rural to urban, public to private and secondary to tertiary institutions also impacted health care delivery, especially in remote and rural areas. This has compromised the quality of care and worsened the health inequity. Moreover, the South African health system struggles with the growing quadruple burden of disease, which not only consists of infectious diseases and HIV/AIDS, but a growing prevalence of chronic diseases, a silent epidemic of maternal, neonatal and child deaths, and a high rate of violence and crime (Delobelle 2013:161).

Though many changes have been made to the health care system to improve the quality of patient care, many women in South Africa still experience preventable obstetric harm. Medical malpractice lawsuits have significantly increased during the last few years. Both the public and commercial health care sectors are subject to medical malpractice litigation, which ultimately has a negative impact on how well healthcare services are delivered, particularly in the public sector (Onyemaobi 2019:5). The cost of legal action for medical negligence falls on doctors and midwives because health insurance is a requirement in the private health sector. Private gynaecologists are withdrawing obstetric care due to the fear of increasing litigation and increasing medical malpractice insurance costs, and focusing solely on gynaecology (Wium, Vannevel, & Bothma 2019:28).

Litigations involving quality of maternal healthcare have become a public concern in South Africa. In a study in a rural district hospital, Magqadiyane (2020:1039-1042) found that the participant midwives experienced litigations from poor working conditions, midwives' lack of competence, which was a leading cause of maternal incidents, a shortage of midwives, and a high admission rate of pregnant women which contributed to poor recording. Magqadiyane (2020:1042) recommended that primary health centres minimise late bookings, and the employment of highly skilled midwives and in-service training to improve the skills of the current ones to reduce medical malpractice and litigations.

In 2010, the Government established the National Planning Commission (NPC), which is responsible for strategic planning for the country. The NPC produced the National Development Plan, which aims to achieve a decent standard of living for all South Africans, with several core areas and challenges, including employment, education, promoting health and others (NPC, 2011). With regard to health, the purpose is to deliver universal healthcare that is accessible, equitable, efficient, and of high quality (Gordon, Booysen & Mbonigaba 2020:1). Although much has been done to restructure the health care system and improve the quality of care rendered, many people still suffer preventable harm every day. Nevertheless, the country has the potential to draw on its experiences of health inequalities and of the detrimental consequences of historical segregation to build high-quality service delivery for the benefit of its citizens (Maphumulo & Bhengu, 2019). The drive to improve the quality of health care in South Africa has not been lacking in interventions or powerful ideas. It seems, however, that corruption and lack of leadership skills continue to cause long delay in the achievement of quality health care delivery (Siddle 2011:6). As a result, the Government of South Africa has a challenge to ensure that the implementation of National Core Standards will deliver the desired health outcomes, because achieving a lasting quality improvement system in health care seems to be an arduous challenge (Maphumulo & Bhengu, 2019). Moreover, Sithole and Mathonsi (2015:25) contend that for local government to deliver on its constitutional mandate, government needs to strengthen human and material resources in terms of quantity and quality. Government must also commit to root out nepotism and corruption in areas such as recruitment for positions and awarding of tenders for services (South African Medical Association [SAMA] 2015:43).

2.4 TYPES OF HEALTH CARE PROVIDERS IN SOUTH AFRICA

In South Africa, health care can be delivered in the private healthcare system or the public healthcare system. These systems are discussed next with the focus on maternal healthcare.

2.4.1 Private health care system

In South Africa, there are more than 200 private hospitals distributed over the country. Two of the biggest private healthcare providers are Netcare, which has 43 hospitals and 18 day clinics throughout the country, and Medi-clinic, which has 53 hospitals. Private health insurance is a feasible alternative for private treatment in South Africa. For the more than 42 million people without private health insurance or medical plans, public health facilities have become the only available option since private health facilities have unaffordable, significantly higher charges (Rakabe, 2018 cited in Redda & Surujlal 2020:1).

To use a private health care facility, one must either pay cash or have health insurance cover. Patients with health insurance or medical assistance may still be required to pay a co-payment. (Gordon et al 2020:2). Private health facilities are primarily used by people who have private health insurance because they provide more individualized treatment and often a wider choice of diagnostic and therapeutic alternatives (Wium, Vannevel, & Bothma 2019:28).

Obstetricians or general practitioners offer the majority of private sector obstetric care. In the private health care hospitals, the midwives care for the patient during labour. When delivery is **im**minent, the obstetrician is informed to conduct the delivery. In terms of Nursing Act, 33 of 2005, Section 15(1), the SANC can permit midwives to open their own practices in South Africa.

2.4.2 Public health care system

South Africa, like other developing countries, has adopted a process of decentralisation in restructuring health care services (Hendricks, Bruch, Seekoei, Bossert & Marc 2014:60). In South Africa, there are three levels of government that are involved in providing healthcare: the national, the provincial, and the district or local government. The classification of hospitals is based on their functional level and takes into account factors such as the number of beds capacity, the medical specialties that may be provided at each level of care, and the type of health care that can be rendered there. District, regional, tertiary and central hospitals are part of the public health system, as well as clinics and community health centres.

The different levels of health care are required for the efficient functioning of the health service. Most medical conditions do not need the specialised services supplied in large hospitals. For cost-effective health management, clinics and hospitals should share the load of patient care, whereby clinics manage common and low risk problems and hospitals the more difficult clinical entities. It is essential to have a referral system in place with clear protocols of management, referral patterns, transport and responsibilities of the various categories of health professionals. Between 60% and 70% of all women who use the government facilities will require the services of a hospital at some stage during their pregnancies and about 15% of women will require the services of a specialist obstetrician at a regional or tertiary hospital (Wium et al 2019:28). Midwives at primary healthcare centres in South Africa offer the majority of public sector obstetric medical care, with 80% of all births occurring in primary health centres and district hospitals, 25% in regional hospitals, and 15% in tertiary hospitals. Patients who have complications or are anticipated to be a high-risk are referred to regional or tertiary hospitals for specialised care by obstetricians (Wium et al 2019:28).

Sui, Reddy, Nyembezi et al (2019:1) emphasize that greater investment in primary health care, particularly in rural and underserved areas, will be required to achieve universal health coverage in the South African health system.

2.4.3 Clinics

This type of health facility normally functions only on weekdays during working hours. Antenatal care is one of the services provided in the clinic, along with treatment of chronic diseases, child health, family planning, and treatment of minor ailments (NDOH 2016:17).

Clinics providing maternal health care services include the following functions:

- Antenatal care for low and intermediate risk women, including point of care blood and urine testing
- Referral of patients identified with risk factors for pregnancy complications to appropriate health facilities (according to referral patterns)
- Immediate management of obstetric and neonatal emergencies

- Postnatal follow-up visits, including the provision of contraceptive services
- Staffing with professional nurses, enrolled nurses, nursing assistant, community health workers and visiting medical officer
- All the necessities to run an antenatal clinic
- Equipment and drugs for obstetric emergencies (oxygen, ringer's lactate solution, magnesium sulphate, salbutamol)
- Sterile delivery packs for unscheduled deliveries
- Reliable transport service for emergency transfer to an appropriate facility.
- An effective communication system (radio or telephone)
- Contraceptive services including insertion of IUCDs and implants.

2.4.4 Community health centre (CHC)

A community health centre (CHC) is a 24-hour comprehensive health service with an obstetric unit run by midwives. Where it stands alone as a maternity service, it might be called a midwife obstetric unit (MOU). The maternity area will typically be located next to other services like emergency care, treatment for minor disorders, treatment for chronic diseases, and promotional services (NDOH 2016:17-18).

The MOU has all the necessities to run and provide maternal health care during the intrapartum period. The staffing includes advanced midwives or midwife specialists, midwives, enrolled nurses, nursing assistants, community health workers, a visiting or resident dietician and a visiting or resident medical officer. The MOU has all the equipment to run a low-risk labour ward, maternal and foetal wellbeing monitoring equipment, hand-held Doppler and cardiotograph (CTG), and effective communication system such as a telephone. The MOU has a reliable 24-hour transport service for emergency transfer to hospital (NDOH 2016:18).

The functions of the MOU include

- Low- to intermediate-risk antenatal care

- Basic emergency obstetric care signal functions: magnesium sulphate, intravenous antibiotics, oxytocicin, vacuum delivery, removal of retained placenta, manual vacuum aspiration, neonatal resuscitation
- 24-hour labour and delivery service for low-risk women
- Comprehensive contraceptive care, management of emergencies and referral of problems to hospital (NDOH 2016:19).

2.4.5 District hospitals

District hospitals in South Africa are typically managed by general practitioners or medical officers and have about 150 beds. For patients from primary care, they serve as the initial point of referral, particularly in isolated and rural locations. Primary or district hospitals in Africa have little capacity for continuous breathing and do not offer intensive or critical care (Mash, Presence-Vollenhoven, Adeniji et al 2021:2). The services provided at district hospitals include trauma and emergency care, in-patient and outpatient consultations, paediatric and obstetric care. These hospitals may employ specialist family physicians, obstetrician/gynaecologists and paediatricians. All equipment is available to run the antenatal clinic (ANC) in the hospital and the labour ward including an ultrasound machine, a vacuum extractor, CTG machines, pulse oximeters, intravenous fluid infusion pumps, a 24-hour laboratory service, anthropometric equipment, emergency blood, equipment and drugs for obstetric emergencies including a fully equipped resuscitation trolley and defibrillator, fully equipped operating theatre, X-ray facilities, and reliable transport service for emergency transfer to regional or tertiary hospitals (NDOH 2016:18).

The functions of district hospitals include:

- Antenatal care for high-risk women, antenatal ultrasound service, treatment of pregnancy problems, including admission to hospital
- Comprehensive emergency obstetric care signal functions: magnesium sulphate, intravenous antibiotics, oxytocin, vacuum delivery, removal of retained placenta, manual vacuum aspiration, neonatal resuscitation, caesarean section and blood transfusion
- 24-hour labour and delivery service including caesarean sections, regional and general

anaesthesia and essential special investigations

- Postnatal care and postoperative care, contraceptive services including postpartum and elective tubal ligation
- Referral centre for clinics and community health centres in the district, supervision of clinics and community health centres in the district
- Referral of complicated problems to regional or tertiary hospitals
- Counselling and support services, genetic screening and counselling services.

2.4.6 Regional hospitals

Regional hospitals render services at a general specialist level, receive referrals from district hospitals, and serve as a platform for training and research. They may also provide some district services within the local sub-district. Experienced specialists lead the teams and the medical disciplines including general surgery, orthopaedics, general medicine, paediatrics, obstetrics and gynaecology, family medicine, radiology and anaesthetics. Regional hospitals frequently offer the functions of district hospitals and are the base specialist health care facility for clinics and community health centres in their defined geographical area. The staff include advanced midwives, midwives, enrolled nurses, nursing assistants, dieticians, full-time medical officers and full-time specialist obstetricians (NDOH 2016:18).

Regional hospitals provide the following services (NDOH 2016:18-19):

- Antenatal care for high-risk women, such as management of severely ill pregnant women
- Treatment of pregnancy problems, including admission to hospital and specialist supervision of the care of pregnant women
- Comprehensive emergency obstetric care signal functions: magnesium sulphate, intravenous antibiotics, oxytocin, vacuum delivery, removal of retained placenta, manual vacuum aspiration, neonatal resuscitation, caesarean section and blood transfusion
- 24-hour labour and delivery service, including caesarean sections
- Regional and general anaesthesia
- Essential special investigations, e.g., prenatal diagnosis with genetic amniocentesis
- Postnatal care and postoperative care

- All district hospital functions, including a blood bank
- High-care area providing short-term assisted ventilation
- Multidisciplinary care - other specialities, dietetics, physiotherapy etc
- Referral centre for district hospitals and, if appropriate, clinics in the region
- Supervision and support for district hospitals and clinics.

2.4.7 Tertiary hospitals

Tertiary hospitals, also called central hospitals, render specialist and sub-specialist care to a number of regional hospitals and serve as a platform for training of health care workers and research. They may also render some regional services. The staffing includes advanced midwives, midwives, enrolled nurses, nursing assistants, full time medical officers and full-time specialist obstetricians, including sub-specialty skills. The tertiary hospital has all the specialised equipment for the management of very ill or difficult obstetric patients (NDOH 2016:19; Mash et al 2021:2).

Tertiary hospitals have the following functions:

- All regional hospital functions, specialist combined clinics, e.g. cardiac and diabetic pregnancy clinics
- Advanced prenatal diagnosis such as chorion villus sampling and cordocentesis
- Management of extremely ill or difficult obstetric patients under the supervision and support of district and regional hospitals
- Responsibility for policy and protocols in the regions served.

2.4.8 Central hospitals

Central hospitals are also referred to as academic hospitals and provide specialized tertiary and quaternary services at a national level and function as a practice field for medical professionals and allied health care workers (NDOH 2016:19).

2.5 POLICY CONTEXT OF NURSING IN SOUTH AFRICA

2.5.1 General context

Nursing is a dynamic process which promotes, supports and restores health status; assists a healthcare user to maintain the basic activities of daily living; requires judgement within a caring therapeutic relationship, informed by the context in which it is practised; maintains continuity and coordination of healthcare; provides continuous support and care to healthcare users, irrespective of their state of health and through all stages of life, and provides and maintains a safe and conducive environment for healthcare (SANC 2005:3). The nursing profession drives the health care system and is at the forefront of preventing and managing various diseases.

Nursing novices are professionally socialized and groomed from their first day of training. The traditions of nursing are gradually unpacked and monitored up to graduation to enhance the relevance and dignity of the nursing profession. Nursing demands the utmost respect for humanity even after death. Most professions have a minimum set of working hours, yet the nursing philosophy calls for and promotes dedication beyond the call of duty. Nursing is a way of life not merely a qualification on paper but lived and experienced charisma (Democratic Nurses Organisation of South Africa [DENOSA] 2015:4).

2.5.2 The South African Nursing Council (SANC)

The South African Nursing Council (SANC) is an autonomous, financially independent, statutory body established by the Nursing Act, 1944, amended by Nursing Act, 50 of 1978 and Nursing Act, 33 of 2005. The SANC is mandated and entrusted to set and maintain quality standards of nursing education and practice in the Republic of South Africa and operates under Nursing Act 33 of 2005 (South Africa, 2005). Section 3 of the Nursing Act (2005) makes provision for the SANC to establish, improve and control conditions thus setting standards and quality of nursing education and training. The SANC is financed through the licensing, registration and accreditation fees paid by nurses and nursing education institutions (NEICs) and works in cooperation with the Ministry of Health in matters related to nursing.

The SANC has the following functions:

- Development, maintenance, promotion and control of standards in nursing education and training
- Registration of different categories of nurses and midwives
- Maintaining the ethical and professional conduct of nurses and midwives.

Accordingly, the SANC regulates the education and training of nurses as follows:

- Prescription of minimum nursing standards for education and training of nurses and midwives
- Approval of all nursing schools and nursing education institutions, including nursing departments at universities
- Accreditation of nursing education institutions
- Accreditation of the nursing training by those institutions and monitoring assessment by nursing education providers in accordance with the law
- Withdrawing or suspending accreditation of a nursing education institution or nursing programme if the education or training provided does not comply with the prescribed requirements and inform the relevant licensing author
- Protecting the rights of the public to receive care from a nurse or midwife who has received a high-quality education intended to equip him / her to provide competent, compassionate and ethically based nursing care; and
- Ensuring that nursing students receive education and training that meets all the requirements for registration as practitioners in South Africa.
- Attending to complaints or reports received about illegal institutions and/or illegal programmes operating in South Africa.

2.5.3 Higher Education Act 101 of 1997

The Higher Education Act 101 of 1997 makes provision for the promotion and maintenance of quality education in higher education institutions (HEICs) (South Africa, 1997). In terms of the Act, the Council on Higher Education (CHE) is the 38education and training quality assurance

body for higher education. The CHE is responsible for the quality of the higher education and training (HET) offered by universities, universities of technology and registered higher education institutions. The CHE regulates the nursing education offered by universities in South Africa (Bruce & Klopper, 2017). Schools and departments of Nursing based at universities have to meet the requirements and criteria set by the CHE and SANC when drafting or finalising nursing programmes, while nursing colleges have to comply with and meet the criteria set by the SANC (Bruce & Klopper, 2017).

The main functions of the CHE include:

- Promoting quality assurance in higher education
- Auditing the quality assurance mechanisms of higher education institutions
- Accrediting higher education institutions offering programmes leading to particular National Qualifications Framework (NQF) registered qualifications.

2.5.4 Categories of nurses in South Africa

In terms of the national qualification's framework, South Africa has four categories of nurses. Table 2.2 lists the qualification categories and length of education and training.

Table 2.2 Categories of Nursing Practitioners and length of education and training

Qualification category	Length of education and training
Certificate in Nursing/Auxiliary Nurse	1 year
Diploma in Nursing/General Nurse	3 years
Bachelor of Nursing Professional Nurse and Midwife	4 years
Postgraduate Diploma Nurse/Midwife Specialist	2 years

Source: SANC (2013)

2.5.5 Scope of practice of nurses and midwives

The SANC (2013, R.786) defines the scope of practice as the parameters within which a category of nurse who has met the prescribed qualifications and registration requirements may practise in terms of Nursing Act 33 of 2005. The practice of nursing is a dynamic process that provides healthcare to individuals, groups and communities. The scope of practice describes the procedures, actions, and processes that healthcare practitioners are permitted to undertake in keeping with the terms of their professional licence.

2.5.5.1 Diploma in General Nursing (General Nurse), Bachelor of Nursing (Professional Nurse and Midwife)

The Diploma in General Nursing (R.171 of 8 March 2013) is a three-year nursing programme, leading to registration with the SANC as a General Nurse while the Bachelor in Nursing (R.174 of 8 March 2013) is a four-year nursing programme, leading to registration with the SANC as Professional Nurse and Midwife. Both programmes consist of theoretical and clinical components which must be completed in each academic year. Upon completion of the diploma in general nursing, nurses can have access to post-basic or post-graduate qualifications offered at colleges and universities. The title of professional nurse may only be used by a person who has met the prescribed educational requirements for registration as a professional nurse in the Regulations relating to the Approval of and the Minimum Requirements for the Education and Training of a Learner leading to Registration in the Categories Professional Nurse and Midwife, published in Government Notice R.174 of 8 March 2013. A professional nurse is also referred to as a registered nurse.

According to Nursing Act 33 of 2005, Section 30(1) (a), a professional nurse is an independent practitioner. Professional nurses are qualified and competent practitioners who provide comprehensive nursing care and accept responsibility and accountability for their own actions. To qualify as a professional nurse requires the successful completion of a four-year nursing study programme at a university or nursing college. A professional nurse should be able to provide emergency care and nursing care, and the administration of medication. Further a professional nurse is responsible for the delegation of enrolled nurses and enrolled nursing assistants and for

ensuring that such care is delegated to competent practitioners (Nursing Act 33 of 3005, Section 4[1]:6). In terms of SANC Regulation 786 section 4.2, the professional and ethical practice of a professional nurse requires a practitioner to demonstrate knowledge of and insight into laws and regulations relevant to the practice of nursing, midwifery and healthcare. Furthermore the professional nurse should practise nursing in accordance with the laws and regulations relevant to nursing, midwifery and healthcare. The professional nurse should advocate for the patient by protecting and ensuring that the patient's rights are not violated during treatment and care. Finally, the professional nurse should provide nursing care in an ethical manner and in an environment that is safe and therapeutic. The professional nurse accepts and assumes accountability and responsibility for his or her own acts and omissions within the legal and ethical parameters of a dynamic healthcare environment.

Overall, a professional nurse is in charge of the unit, who accounts for herself, the patient, subordinates, employer and the SANC. A professional nurse is an independent practitioner in her/his own right. This implies that Professional Nurses should use all their knowledge and acquired skills to make judgements in the clinical area that are safe and effective for the best outcomes of the patient (Nursing Act, 33 of 2005).

2.5.5.2 Enrolled Nurse/Staff Nurse

The title of enrolled nurse or staff nurse may only be used by a person who has met the prescribed education requirements for registration as a staff nurse and has acquired and maintains the competencies to practise as a staff nurse and is registered as a staff nurse in terms of section 31(1)(c) of Nursing Act, 33 of 2005**.** An enrolled nurse is a person who has completed a two-year training programme as prescribed by the SANC (2013, R.176). According to Regulation 786, the clinical practice of a staff nurse is to provide basic nursing care for the treatment and rehabilitation of common health problems for individuals and groups. Enrolled nurses have a limited scope of practice and are required to practise nursing under the direct and or indirect supervision of registered nurses. Although the scope of practice of enrolled nurses limits their practice within the midwifery specialty, enrolled nurses may assist midwives and doctors in the maternity unit. The scope of practice of enrolled nurses entails the following acts and procedures as part of the nursing regimen planned and initiated by a registered nurse or registered midwife and carried out under his/her direct and/or indirect supervision:

- Assist the midwives and doctors in the birthing unit or maternity unit to care for a patient and execute a nursing care plan for a patient, including the monitoring of vital signs and the observation of reactions to medication and treatment.
- Assist in the prevention of disease and the promotion of health and family planning by means of providing information to the woman and the promotion and maintenance of the hygiene, physical comfort and reassurance of a patient.

The limited scope of practice of enrolled nurses, therefore, restricts their ability to provide maternal health care services such as care during pregnancy, labour and puerperium. Before the revised and new curriculum (R.171:3), the regulations relating to the approval of and the minimum requirements for the education and training of a learner leading to registration in the category Staff Nurse in 2013, staff nurses were allowed to study a two-year Bridging nursing programme leading to registration as a professional nurse. With the new curriculum nursing framework, enrolled nurses can register in a new curriculum that entails three years in General Nursing (R.171). The enrolled nurse is a legacy qualification and only general nurses can be trained. Amongst other duties, the enrolled nurse should evaluate healthcare users' progress towards expected outcomes and revise nursing care plans in accordance with evaluation data. The enrolled nurse should create and maintain complete and accurate nursing records for individual healthcare users and demonstrate and maintain adequate knowledge and skills for safe practice (R.786, section 7.3).

2.5.5.3 Enrolled Nursing Assistant

The title of enrolled nursing assistant may only be used by a person who has met the prescribed education requirements for registration as an auxiliary nurse and has acquired and maintains the competence to practise as an auxiliary nurse and is registered as an auxiliary nurse in terms of Section 31(1)(d) of Nursing Act 33 of 2005. Enrolled nursing assistants are nurses who have completed one year of training and are able to deliver basic nursing care to patients (R.169, 2013). Enrolled Nursing Assistants are also referred to as Auxiliary Nurses. The title of auxiliary nurse may only be used by a person who has met the education requirements for registration as an auxiliary nurse (R.169, 2013). The enrolled nursing assistant is delegated to provide basic nursing care as instructed by a professional nurse, staff nurse, or enrolled nurse. The scope of practice

of an auxiliary nurse is to provide elementary nursing care and the primary responsibilities entail providing elementary nursing care as prescribed and delegated by a professional nurse or staff nurse. Like other categories of nurses, auxiliary nurses are expected to provide elementary nursing care in accordance with a standardised plan of providing assistance and support to a person for the activities of daily living and self-care and be able to render basic first aid (R.786, section 10.1).

Enrolled nurse assistants in the maternity unit basically assist in the monitoring of vital signs, feeding, and bathing of patients. Enrolled nurses work under the direct and/or indirect supervision of registered nurses. The scope of practice of the enrolled nursing assistant is limited to providing basic nursing care, therefore the enrolled nursing assistant cannot provide maternal health care services, but can assist the midwives during care by capturing the patient data. In the labour ward, the enrolled nursing assistant assists the midwives by capturing and interpreting data, such as vital signs, and reporting abnormal or subnormal findings. The functions of the enrolled nursing assistant in the labour ward include bathing of patients, emptying of catheter bags and feeding of patients (SANC, 2005).

2.5.6 Education and training in Midwifery

Midwifery is offered at different programmes and levels. A one-year midwifery programme is done by general nurses and is considered a basic midwifery programme (R.786, 2014). On completion of both programmes at the different entry levels, a candidate may register as a midwife in terms of the regulations for the course for the diploma in midwifery for registration as a midwife (R.174). The midwifery component is also integrated in the four-year diploma or degree programme leading to registration as a General Nurse Midwife (R.174). The midwifery component within the four-year diploma or degree remains basic midwifery.

2.5.6.1 Postgraduate Diploma in Midwifery (Midwife Specialist)

The regulation relating to the approval and minimum requirements for the education and training of a student leading to registration as a Nurse Specialist or Midwifery Specialist (R.635 of 5 June 2020) is a new revised programme (Government Notice No. 1497 of 22 November 2019). The

postgraduate diploma in midwifery is aligned with the Higher Education Qualifications Sub-Framework (HEQSF).

The midwife specialist is a registered nurse practitioner who has completed a midwifery postgraduate nursing programme and has met the theoretical and practical requirements (R.635 :24). Prior to admission to the programme, a candidate for the postgraduate diploma in midwifery must be registered with the SANC as a professional nurse and general nurse with midwifery qualification (R.635:24).

2.5.6.2 Expected outcomes of the postgraduate diploma in midwifery

Within the ethical and legal constraints of the profession, the midwife specialist should practise and enable specialist nursing, nursing education, or health services management. The following are expected outcomes for a student who has completed the postgraduate diploma in midwifery (R.635:8-10):

Exit level outcomes applicable to clinical specialisation

- Using a scientific approach, the midwife specialist should render and coordinate patient-centred specialized nursing or midwifery practice within a continuum of care, incorporating biological and psychological sciences, as well as sophisticated pharmacology.
- Uses and facilitates knowledge of midwifery evidence-based practice, nursing education, and management in the specialty field to address contextual problems and produce policies and guidelines that improve the delivery of safe, high-quality midwifery care.
- Maintains competency by evaluating and developing self, peers, and nurse specialist or midwife specialist students through self-directed leadership and lifelong learning.
- Assists in professional advocacy and the provision of specialized professional support to personnel, patients, families, and communities.
- Manages a specialist unit, an educational entity, or a health service by planning, commissioning, and managing it.
- Engages in health discussion, shared leadership, decision-making, and sound clinical judgment within the multidisciplinary team.

- Develops and implements institutional policies, protocols, and guidelines in the area of midwifery speciality by utilizing the change management process to improve the quality of maternal and neonatal care.
- Participates in the design, development, implementation, and evaluation of nursing policies, programmes, and projects at the provincial or national level (R.635:8)

Exit level outcomes applicable to nursing education

- Develops, executes, and analyses a programme or curriculum for midwife specialist teaching and learning.
- Facilitates teaching and learning of students, patients or clients, families and communities in conducive theoretical, simulation, online and clinical learning environments
- Engages in and facilitates assessment and evaluation of learning and applies the knowledge of and facilitates the management of the nursing education institution
- Participates in and facilitates internal and external review of the Nurse Specialist or Midwife Specialist programme or curriculum at all levels (R.635:9-10).

Exit level outcomes applicable to health services management

- Assists in the design and implementation of strategic and operational strategies, as well as essential institutional policies, and manages resources to ensure a health facility's or unit's efficacy and efficiency.
- Participates in the planning and coordination of nursing and midwifery activities, duties, and responsibilities in order to align them with strategic objectives.
- Facilitates jointly with internal and external standard measures of the health facility's performance based on established standards, and initiates innovative projects based on regular monitoring and analysis of the strategic plan for attainment of its objective through the change management process.
- Establishes external connections with the local, regional, national, and international contexts in order to attain best practices and a strong competitive position.
- Engages in health discussion, shared leadership, decision-making, and sound clinical judgment within the multidisciplinary team.

- Develops and implements institutional policies, protocols, and guidelines in the midwifery specialty by utilising the change management process to improve the quality of maternal care.
- Participates in the design, innovation, implementation, and evaluation of midwifery policies, programmes, and projects at the provincial or national level (R.635:10).

The postgraduate diploma in midwifery qualification will enable the graduate to function as a clinically focused, service-oriented, independent midwife, who is able to render comprehensive midwifery care (SANC, R.635, 2020). Educating midwives according to international standards could avert more than 80% of all maternal deaths, stillbirths and neonatal deaths (WHO, 2015). Midwives educated to international standards not only improve overall health, but because they work across the entire continuum of care, from communities to hospitals, are uniquely able to provide essential services to women and newborns in even the most difficult humanitarian, fragile and conflict-affected settings (WHO, 2019). The WHO (2019) recommends that midwives be licensed, regulated and fully integrated into health systems and work in interprofessional teams.

2.5.6.3 Training of midwives in South Africa

The education and training of nurses in South Africa is regulated by the SANC. For persons to be admitted to an academic programme leading to qualification as a nurse, they need to have passed Grade 12. The South African Qualifications Authority (SAQA) defines this pass at level 4 of the National Qualifications Framework (NQF) (Mahlathi & Dlamini 2017:9).

The National Department of Health is responsible for nursing service provision whilst the Department of Higher Education and Training is responsible for the education aspects through the Council on Higher Education. Midwifery training programmes are presented at both public and private nursing education institutions. Nursing education and training takes place at three types of facilities – nursing colleges, which are located within provincial Departments of Health; private nursing schools, which are either attached to private hospitals or are independent, and universities (Mahlathi & Dlamini 2017:9). According to the SANC, nursing education and training across South Africa is responding to changing needs, developments, priorities and expectations in health and healthcare. Nurses who acquire the knowledge, skills and behaviours that meet our standards will

be equipped to meet these present and future challenges, improve health and

wellbeing and drive standards and quality up, working in a range of roles including practitioner, educator, leader and researcher (Mahlathi & Dlamini 2017:10).

The SANC determines the extended scope of practice and essential competencies required for nurses with additional specialities. Upon successful completion of the prescribed midwifery training programme, the registered nurse is then referred to as a midwife specialist and is equipped with the theoretical and practical components of the field. After completing the studies, new nurses must first complete a year of mandatory community service before entering the workforce. In terms of Section 40(3) of the Nursing Act, 33 of 2005 and after consultation with the SANC, the Minister of Health published the regulations relating to performance of community service. It is mandatory that any person who is a citizen of South Africa intending to register for the first time as a professional nurse in terms of the Act, as having met the prescribed requirements to qualify as such, must perform remunerated community service for a period of one year as per Regulation No.765 under Act 33 of 2005:29).The performance of community service is applicable to nurses who seek registration on completing and meeting the requirements prescribed in the regulations relating to the approval of and the minimum requirements for the education and training of a nurse.

2.5.6.4 Midwife's scope of practice

The SANC (2005:17) defines a midwife as a person who has met the prescribed education requirements for registration as a midwife, has acquired and maintains the competence to practise as a midwife and is registered as a midwife in terms of section 31(1)(b) of the Act. Midwifery is a profession regulated and practised according to a legal and ethical framework by persons registered under Section 31(1) (b) of the Act (SANC 2005:15). Midwifery promotes, maintains, restores and supports the health status of a woman and her child during pregnancy, labour and puerperium, is a dynamic process based on scientific knowledge, skills and judgement within a caring therapeutic relationship, informed by the context in which it is practised, and provides continuous support and care of a woman, her child and family through all stages of pregnancy, labour and puerperium. A midwife is someone who has completed a recognized midwifery education programme, must be registered and/or legally licensed to practise midwifery and demonstrate competency in the practice of midwifery (Li, Lu & Hou 2018:166-167).

The South African Nursing Act 33 of 2005 outlines the scope of practice of midwives. Section 14 (1) states that it is within the competence of a midwife to assume full responsibility and accountability for the promotion, maintenance, restoration and supporting the health status of a woman and her child during pregnancy, labour and the puerperium. The midwife should provide comprehensive care of a woman during pregnancy, labour and puerperium in all health care settings. Assuming responsibility and accountability means the midwives should be competent enough to provide emergency care and ensure that the care provided to the mother and neonate is safe at all the times. Furthermore, the midwife should ensure that the environment where midwifery health care is provided is conducive and safe to practise midwifery in an ethical manner. The midwife should accept and assume accountability and responsibility for his or her own actions and omissions within the legal and ethical parameters of a dynamic health care system. The scope of practice of midwives identifies the circumstances in which the midwife may make autonomous clinical decisions and in what circumstances the midwife must practise in collaboration with the health team. In several countries, midwives have the authority to handle normal pregnancy, labour and aftercare and to prescribe drugs for birth contraception (International Confederation of Midwives [ICM], 2018; Li, Lu & Hou 2018:166-167). In the South African context, however, midwives manage patients in collaboration with doctors, particularly in hospitals, while midwives in primary health care (PHC) and MOUs are authorised to care for patients during pregnancy, labour, and puerperium independently.

In South Africa, the professional and ethical practice of a midwife requires the midwife to demonstrate knowledge and insight into legislation relevant to the practice of midwifery and neonatal health care. The midwife should practise midwifery and neonatal health care in accordance with the legislation relevant to midwifery and neonatal health care. The clinical practice of a midwife is to provide care and management as an independent practitioner, of all aspects that influence the course of pregnancy, labour and the puerperium (SANC 2005:13-17). The quality of practice of a midwife requires the practitioner to participate in the development and maintenance of a plan to improve the quality of midwifery and neonatal health care. Midwives should engage in continuous training to maintain their competency levels, to exhibit strong diagnostic reasoning skills and reliable clinical judgement to provide quality intrapartum care which would assist in decreasing preventable intrapartum maternal deaths (Malesela 2016:6). Midwives should ensure that they delegate obstetric care to competent practitioners. According to the SANC (2005), the midwife should provide direction for the implementation of the midwifery care plan, and supervision for midwifery and neonatal care. Furthermore, the midwife is expected

to appropriately refer a healthcare user to other members of the multidisciplinary health team. The midwife and the obstetric team should be competent to evaluate a healthcare user's progress towards expected outcomes and revise midwifery care plans in accordance with evaluation data.

The quality of practice of a midwife requires the practitioner to participate in the development and maintenance of a plan to improve the quality of midwifery and neonatal health care (SANC, 2005). Moreover, the midwife should implement and manage a quality improvement plan for his or her own context of practice. Midwives should engage in continuous professional development programmes to ensure that they keep abreast of current changes in health care to be able to respond to patient needs. Midwives must constantly review their practice against professional standards and incorporate relevant and current research findings to ensure that they are practising evidence-based midwifery at all times. Midwives should identify their own learning requirements and keep up to date on the knowledge and skills essential for competent and independent midwifery practice (SANC 2005:15).

The scope of practice of midwives to achieve quality midwifery care requires the midwife to actively engage in the development of standards, criteria and indicators for quality midwifery, neonatal and healthcare (SANC 2005:15-16). Midwives should create an environment and learning opportunities that foster professional growth and improvement in midwifery practice. The midwife should actively engage in the education and training of learners in healthcare and assist with the development of midwifery standards for the improvement of care through research, and create and maintain an environment that promotes the safety, security and integrity of healthcare users. The scope of practice requires the midwife to create and maintain complete and accurate midwifery records for individual healthcare users. Finally, the midwife should advocate for the rights of healthcare users, promote and empower healthcare users to participate in health care to achieve self-reliance, and demonstrate and maintain adequate knowledge and skills for safe practice (SANC 2005:18).

Midwives should participate in the auditing of the quality of midwifery and neonatal health care and incorporate appropriate and current research findings to ensure that they provide evidence-based midwifery and neonatal health care practice (SANC 2005:20). Midwives should commit themselves to the development, maintenance and facilitation of lifelong learning for self and others; identify their own learning needs and maintain knowledge and skills required for competent and independent midwifery and neonatal health care practice. This will allow midwives

to actively engage in the development of standards, criteria and indicators for quality midwifery and neonatal health care to improve maternal and neonatal outcomes.

The majority of approximately 140 million births that occur globally every year are among women without risk factors for complications for themselves or their babies at the beginning and throughout labour (WHO 2018:1). Nevertheless, the time of birth is critical to the survival of women and their babies, as the risk of morbidity and mortality could increase considerably if complications arise during the intrapartum period. Labour is diagnosed if there are persistent painful uterine contractions accompanied by change in cervical effacement and dilatation, ruptured membranes and show (NDOH 2019:46). To prevent unnecessary complications, which could eventually lead to avoidable intrapartum maternal, foetal and neonatal death, health services should make every effort to ensure skilled professional attendance at birth for all pregnant women (NDOH 2019:46). This means that both the midwife and the doctors should be competent to provide evidence-based midwifery practice at all times.

2.5.6.5 Annual practicing certificates for nurses

The South African Nursing Council (SANC) governs the practice of nursing by ensuring that no persons may practise nursing or midwifery in the country unless they are registered to practise in the following categories: Professional nurse, midwife, staff nurse, and auxiliary nurse (SANC, 2005). The SANC mandates that all nurses pay a prescribed fee to renew their licences annually. The annual licence fees are based on the category of the nurse. Special discounted annual practising certificate fees apply to nurses over the age of 65 years, who still practise nursing, and those who wish to maintain their registration after retirement.

The annual practising certificate (APC) is a document with the SANC logo, name, and contact details issued on payment of an annual fee to nursing and midwifery practitioners. The certificate entitles the person to whom it has been issued to practise in the capacities shown and for the period stated. For security measures and to prevent fraudulent use, the SANC does not issue a duplicate certificate, even on request, but a letter confirming that the nurse practitioner is registered with SANC can be issued on request. Thereafter nursing practitioners pay an annual fee and are issued an annual practising certificate in order to continue to practise in that capacity.

The SANC has also introduced eRegister. The *e*Register is published in terms of section 35 of the Nursing Act, 2005 as a copy of the active records in the SANC official register. It is primarily intended for use by employers or prospective employers to verify the registration status of an employee or prospective employee. Practitioners may also use the eRegister to confirm their own registration status (SANC, 2005).

2.6 STATUTORY BODY FOR MEDICAL DOCTORS IN SOUTH AFRICA

The Health Professions Council of South Africa (HPCSA) is a statutory body established in terms of Section 2(1) of the Health Professions Act, 56 of 1974. The HPCSA is committed to regulate and guide healthcare professions and protect the public through setting contextually relevant standards for healthcare training and practice. The HPCSA is a professional body governing the legal and ethical practice of all doctors and allied health professionals in South Africa, excluding nurses and midwives.

2.6.1 Health Professions Council of South Africa (HPCSA)

The HPCSA established the Inspectorate Office in 2014, as a law enforcement and compliance unit to ensure compliance with the Health Professions Act, 56 of 1974. The mandate of the inspectorate office is to enforce compliance through conducting inspections of registered practitioners and investigation of illegal practices by unregistered persons. The vision of the HPCSA is to enhance the quality of health by developing strategic policy frameworks for effective coordination and guidance of its 12 professional boards in setting health care standards for training and discipline of the professionals registered with the HPCSA, ensuring ongoing professional competence, and fostering compliance with those standards (HPCSA, 1974).

The HPCSA, together with the 12 professional boards under its ambit, was established to provide for control over the education, training and registration for practising of health professions registered in terms of the Health Professions Act. In order to protect the public and guide the professions, the HPCSA ensures that practitioners uphold and maintain professional and ethical standards within the health professions and ensures the investigation of complaints concerning practitioners and that disciplinary action is taken against persons who fail to act accordingly

(HPCSA, 1974). The Health Professions Act governs all activities, defines the scope of each profession which it mandates to register with HPCSA, and sets clear processes to be followed.

2.6.2 Role and powers of the Council

The HPCSA is mandated under the Health Professions Act 56 of 1974, to regulate registered healthcare practitioners. The Medical and Dental Board regulates medical and dental practitioners by:

- Setting and maintaining standards of training and practice for healthcare professionals, and disciplining those who fall short of those standards, if necessary
- Setting and monitoring mandatory requirements for the continuing professional development of all registered practitioners and ensuring that training institutions adhere to the Council's standards
- Setting professional and ethical standards and publishing guidelines for practitioners to follow.
- Advocacy for innovative and sustainable professional practice and transparency.

2.6.3 Main responsibilities of medical doctors

The core document that all medical practitioners should be aware of is the Ethical Rules of Conduct for Practitioners Registered under the Health Professions Act, 1974, which contains the rules which medical practitioners must adhere. Non-adherence may lead to discipline by the Council.

The medical practitioner must:

- Act in the best interest of his or her patients.
- Respect patients' confidentiality, privacy, choices and dignity.
- Maintain the highest standards of personal conduct and integrity.

- Provide adequate information about the patient's diagnosis, treatment options and alternatives, costs associated with each treatment so that the patient can make informed decisions pertaining to his/her health and that of others.
- Keep his or her professional knowledge and skills up to date.
- Maintain proper and effective communication with his or her patients and other professionals.
- Except in an emergency, obtain informed consent from a patient or, in the event that the patient is unable to provide consent for treatment himself or herself, from his or her next of kin. All doctors are required to keep accurate patient records (HPCSA, 1974).

2.6.4 Education and training of medical doctors in South Africa

In order to have their training recognised in South Africa, students must be fully registered with the Health Professions Council of South Africa and must be appointed against HPCSA-approved training numbers which the HPCSA allocates to the faculty and against which the faculty appoints selected students. To become a medical doctor, the student should complete a 5-year Bachelor's degree in Medicine and Surgery at a university registered with and accredited by the Department of Higher Education. After completion of the five-year training, the student undergoes two years of clinical internship. After compilation of the programme at the university, the student will be registered as a medical doctor under the HPCSA. All medical doctors are required to do compulsory community service (HPCSA, 1974).

The specialist doctor's programme trains medical doctors to become specialists in one of a range of disciplines. Training takes place over a minimum period of four years, is full-time, and in some cases over a longer period, to allow the student to complete a dissertation. Specialist trainees must hold training posts, referred to as registrar posts, while they undergo their specialist training with the University. The subspecialist training, which is also referred to as super-specialist, is a sub-speciality that follows after the doctor has obtained a speciality qualification. Training takes place over a minimum period of two years, full-time. In some cases, the student may be allowed additional time to complete the dissertation. Subspecialist trainees must hold training posts, usually senior registrar posts, while they undergo their subspecialist training with the University.

2.6.5 Categories of medical doctors in South Africa

There are three categories of medical doctors in South Africa, medical doctor, specialist or consultant, and super specialist. During the specialist training, the medical doctors can choose from a variety of field of specialisations such as Obstetrics and Gynaecology, critical care, orthopaedics, trauma and surgery. Table 2.4 summarises the categories of medical doctors and duration of training.

Table 2.3 Categories of medical doctors and length of education and training

Qualification category	Length of education and training
Medical Doctor	7 years
Specialist/Consultant	4 years
Sub/Super Specialist	2 years

2.6.6 Annual licence for doctors and allied health professionals

Like the SANC, all doctors and allied health professionals are required to renew their licences annually. Registration with the HPCSA is a pre-requisite for professional practice, and is also a legal requirement to keep all personal details up to date at all times.

Health practitioners pay an annual fee for this registration and failure to pay the fee could result in suspension from the register. Should a health practitioner be suspended from the register for some reason, she or he is allowed to redeem by applying for restoration and paying the restoration fee.

The

2.7 MATERNITY CARE IN SOUTH AFRICA

There is global commitment to reduce the high maternal death rates in low- and middle-income countries. In order to improve maternal and neonatal outcomes in South Africa, national coordination and collaboration with role players in the provision of health services, addressing the causes of maternal and perinatal mortality, and making clinical care protocols available is required. According to the NDOH (2016:12), maternity care is an essential component of primary health care (PHC) and a free health service for pregnant women. In South Africa, the Maternal and Child Health programme focuses on meeting the basic needs of rural and urban communities, maximising human resources potential, enlarging the economy and spreading its benefits to all South Africans. To comply with these principles, health care services for pregnant women and children under the age of 6 years have been free since July 1994 (NDOH 2016:1). The majority of maternity patients who do not have private health insurance use the government or public health care system for services. The public healthcare system is free, but entails long waiting times and inadequate resources (Wium et al 2019:28).

2.8 MATERNAL DEATHS IN SOUTH AFRICA

2.8.1 General context

Maternal mortality is defined as the death of a woman while pregnant or within 42 days after delivery or after termination of the pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management (WHO 2018:57; NDOH 2015:16). Maternal health in South Africa is a national health matter since maternal health services can save the lives of women of reproductive age. Skilled treatment before, during, and after childbirth can save the lives of both women and their newborn babies. Maternal mortality is one of a country's most important health indicators, and of global concern.

Despite a worldwide reduction in maternal mortality, many countries in Sub-Saharan Africa, including South Africa, failed to meet the MDG 5 objective in 2015. The MMR estimated by the District Health Information System (DHIS) in 1998 was 150/100000 live births and iMMR for South Africa for the 2017-2019 triennium was 113.8 (see Table 2.4 and Figure 2.2). Although there has been a progressive and sustained reduction in maternal mortality in most of the nine provinces and in underlying causes of maternal death, South Africa has not met the national target of 70 maternal deaths per 1000 live births. There is no single solution for reducing maternal mortality, but a reliable health system with experienced personnel is critical.

Table 2.4 Maternal mortality ratio (MMR) per province per year, 2017-2019

Province	2017	2018	2019	iMMR 2017-2019
EC Eastern Cape Province	132,10	121,94	110,32	121,24
FS Free State Province	139,14	186,78	144,83	157,14
GP Gauteng Province ©	117,23	110,86	100,54	109,52
KZN KwaZulu-Natal Province	131,81	99,41	82,22	103,11
LPLimpopo Province ©	141,82	134,97	126,20	134,13
MP Mpumalanga Province	148,11	139,09	84,07	122,95
NW North West Province	143,07	157,31	124,98	141,62
NC Northern Cape Province	126,98	106,83	133,13	122,28
WC Western Cape Province	73,52	72,09	50,77	65,17
	125,89	**117,69**	**98,82**	**113,77**

Source: NDOH (2020:24)

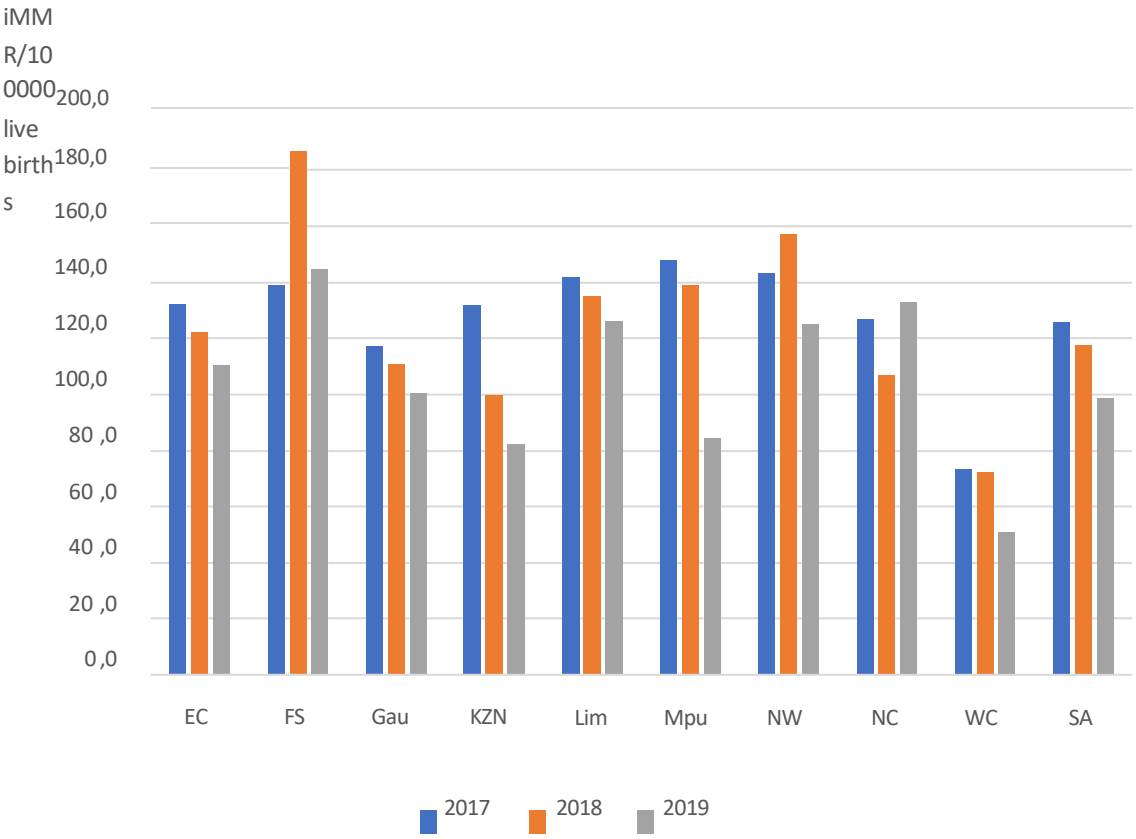

Figure 2.2 Comparison of iMMR per province, 2017-2019

Source: NDOH (2022:28)

Maternal death during pregnancy, childbirth, and postpartum is a tragedy that has a devastating impact on families and is a key measure of a healthcare system's effectiveness (Collier & Molina 2019:e562). More than one third of maternal deaths occur during the intrapartum period and the majority are largely preventable. To reduce preventative maternal deaths requires effective multidisciplinary strategies such as monitoring of labour and childbirth, early identification, timely intervention and treatment of complications (WHO 2020:1; Baharuddin, Amelia, Suhowatsky, Kusuma, Suhargono & Eng 2019:62). The term “intrapartum” refers to the time between the start of real labour and the delivery of the baby, characterised by painful uterine contractions, until the first hour after childbirth (WHO 2018:3). The aim of Sustainable Developmental Goal 3 (SDG3) is good health and well-being, and the goal of target 3.1 is to reduce unnecessary maternal mortality by the year 2030 (WHO 2015:6). The WHO (2020:1) identified improving the quality of care

around the time of birth as the most impactful strategy for reducing preventable intrapartum maternal deaths, compared with antenatal or postnatal care.

Maternal deaths may be divided into direct and indirect obstetric deaths. Direct maternal deaths result from obstetric complications of pregnancy, labour or the puerperium, from interventions, omissions, incorrect treatment or from a chain of events resulting from any of these (NDOH 2015:12). Indirect maternal deaths result from a previously existing disease that was aggravated by the physiological effects of pregnancy. Indirect obstetric deaths include chronic hypertension, HIV, asthma, chronic diabetes while direct obstetric deaths include gestational hypertension, pre-eclampsia and eclampsia gestational diabetes, obstetric haemorrhage.

South Africa's maternal mortality ratio remains high although it has substantially declined in the past few years (Bomela 2020:2). Despite the high levels, the number of maternal deaths and the institutional Maternal Mortality Ratio (iMMR) in South Africa have decreased since 2009. The iMMR dropped from 189 deaths per 100,000 live births in 2009 to 135 deaths per 100,000 live births in 2016. Bomela (2020:18) found that sociodemographic factors, including age, province, occupation, education and marital status, also played a role. A study in a rural South African population with a high HIV prevalence found that the decline in maternal deaths between 2000 and 2014 was largely attributable to improvements in HIV treatment (Tlou, 2018). South Africa continues to strengthen its policies in order to reduce the maternal mortality and MMR by designing and implementing new programmes applying maternal health improvement initiatives. Maternal mortality is one of the significant health indicators of any country. There is no specific single solution for reducing maternal mortality but a reliable health system with skilled personal is vital for addressing the maternal mortality (Tlou 2018:6-9).

The WHO recognises the Maternal Death Surveillance and Response (MDRS). The MDRS is a continuous surveillance linking the health information system and quality improvement processes from local to national level (Mathai, Dilip, Jawad & Yoshida 2015:54). The goal of the MDRS is to provide information that can effectively guide actions to end the preventable maternal mortality in health facilities and communities (Mathai et al 2015:54). Every maternity department should have an MDRS committee, consisting of midwives and doctors to discuss and analyse the cause of each maternal death. The aim is to establish whether the maternal death was preventable or not and to develop a quality improvement plan to prevent future avoidable deaths. A preventable death is a possible and probable potentially avoidable maternal death due to substandard care

and missed opportunity (NDOH, 2020). A preventable intrapartum maternal death implies that an

opportunity was present to prevent the maternal deaths but the opportunity was missed. An example of a preventable intrapartum maternal death is a patient who has delivered a baby and was not given oxytocin and bled to death from uterine atony.

2.8.2 The confidential enquiry into maternal deaths

The National Committee for Confidential Enquiries into Maternal Deaths (NCCEMD) system for recording and analysing maternal deaths has been in operation since 1 October 1997. The first comprehensive report on maternal deaths in South Africa was published in October 1999 and dealt in detail with maternal deaths occurring during 1998. These reports describe the magnitude of the problem of maternal deaths, the pattern of diseases causing maternal deaths, the avoidable factors, missed opportunities, and health system failures related to these deaths and make recommendations on ways of decreasing the number of maternal deaths (NDOH, 2015).

The NCCEMD committee makes recommendations to health professionals and the national Department of Health on how to reduce maternal fatalities. The NCCEMD is a ministerial committee of experienced personnel representing obstetrics, midwifery, anaesthesia and the nine provinces. Its mandate is to produce recommendations based on the analysis of maternal fatalities reported, with the goal of lowering the maternal mortality ratio through implementation of quality improvement plan suggested by the team of experts (NDOH 2015:2).

The National Confidential Enquiry into Maternal Deaths (NCEMD), which records maternal deaths, and the Perinatal Problem Identification Programme (PPIP), which records stillbirths and neonatal deaths, are widely used to estimate maternal and neonatal mortality in the country. Maternal deaths are derived from routine surveillance of maternal deaths at facility level in CEMD data, while deaths are derived from causes of death in vital registry data, and maternal deaths are derived from pregnancy-related data at household level in surveys and censuses (Statssa, 2021).

Lessons learned have resulted in recommendations to improve the clinical management not only during pregnancy, but also throughout labour and the postpartum period. In addition, recommendations are made in the form of triennial studies that emphasize flaws in the health-

care system, preventable variables in individual clinical care, and whether a death may have been avoided (NDOH 2020:4).

2.8.3 The process of reporting maternal deaths

This section describes the process of notification and independent assessment of maternal deaths, predominantly in facilities. A study in South Africa on the assessment and analysis of the impact of socio-demographic factors on maternal mortality in South Africa found that the reporting of maternal mortality has dramatically improved, becoming more efficient and trustworthy, allowing for the early detection of issues such as unnecessary fatalities, poor clinical assessment, referral delays, patient monitoring, and a lack of suitably trained doctors. Despite these achievements, considerable work remains to be done in order to improve and lower the maternal mortality ratio in South Africa to acceptable levels (Bomela, 2020).The CEMD process has been maintained and reinforced and can perform routine maternal death surveillance at both national and district levels, identify health system weaknesses, generate a report, and provide early warnings about alarming trends, such as the rising number of deaths from caesarean section haemorrhage (Moodley, Pattinson, Fawcus, Schoon, Moran & Shweni 2014:1).

Reporting of maternal deaths in South Africa is becoming more efficient and reliable. The NCCEMD is able to produce an interim report before the end of the following year in the Saving Mothers report. This includes a breakdown of deaths per district and the underlying causes of those deaths. The rapid reporting enables the NCCEMD to identify a trend in increase in maternal deaths and for the National Department of Health to be notified and for corrective action to be taken (NDOH 2019:2). Figure 2.3 illustrates the process of reporting maternal deaths.

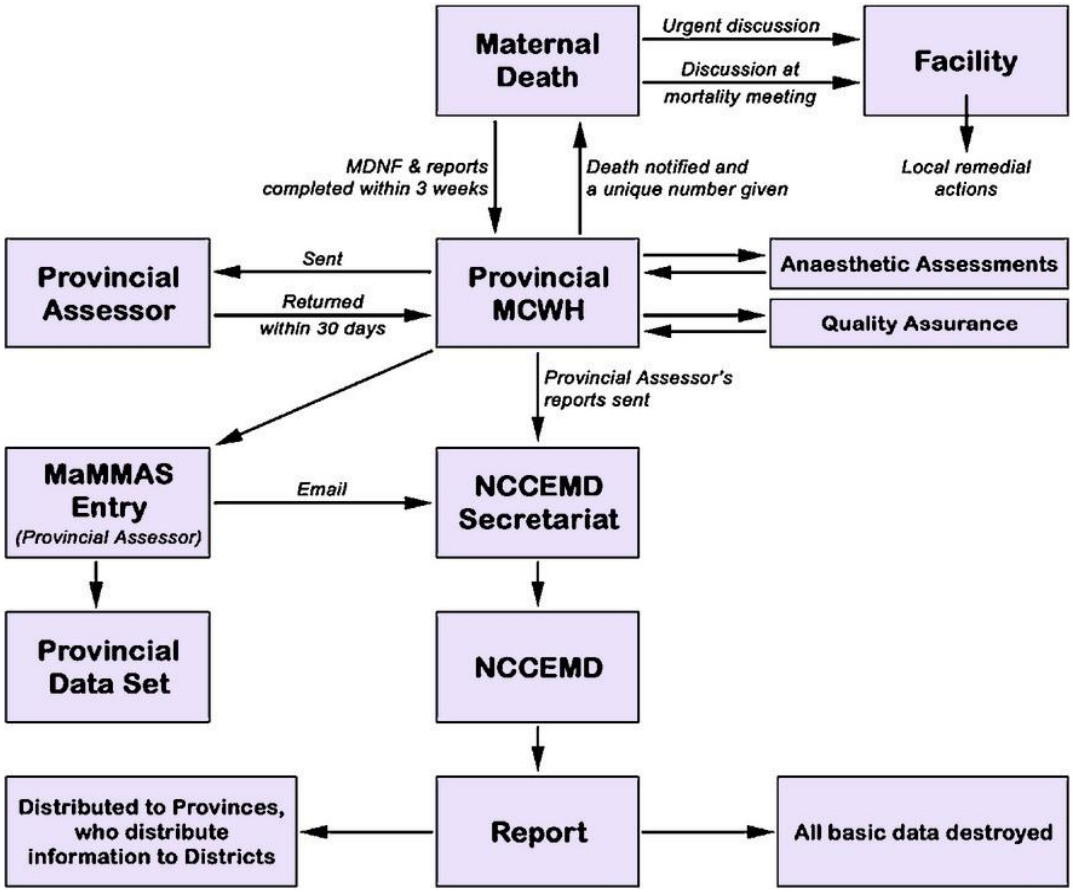

Figure 2.3 Process of CEMD in South Africa

(MDNF = maternal death notification form; MCWH = maternal, child and women's health; MaMMAS = maternal morbidity and mortality audit system; NCCEMD = National Committee for the Confidential Enquiries into Maternal Deaths)

Source: Moodley et al (2014)

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Figure 2.3 shows that in the process of reporting maternal deaths, two audit loops are essentially advised. First, there is a discussion at the facility where the maternal death has occurred, so that any preventable factors can be identified and addressed right away at the local level. The CEMD process is the second audit loop. The provincial maternity and child health coordinator receives a notification of the maternal death and assigns it a unique number. A specially designed Maternal Death Notification Form (MDNF) is completed and sent to the coordinator along with a photocopy of all clinical records, to be assessed by teams of independent provincial assessors, which may

include obstetricians, medical officers, midwives, and anaesthetists when necessary (Moodley et al 2014:55).

To overcome inherent biases, assessors work in pairs, usually a midwife, preferably a midwife specialist and an obstetrician or an experienced medical officer. In maternal deaths where the woman has received an anaesthetic and died, an anaesthetic assessor assesses and analyses the patient file to determine the cause of death. The provinces appoint assessors based on their expertise of the subject and professional status.

Assessors are not paid for their work because auditing is considered one of a doctor's or midwife's professional responsibilities. Assessors' travel expenses are reimbursed when they attend national assessors' meetings, as well as travel locally in some regions. These assessors use a standardized assessor's form to identify Causes and Avoidable Factors, which are then entered into the Maternal Morbidity and Mortality Audit System (MAMMAS). This is an automated data-gathering system that collates information from all the provinces. At the provincial level, there is a quality control component to guarantee that assessments are as precise as possible. At national level, the MAMMAS data are used to generate tables and the information is collated into reports.

Saving Mothers Reports are prepared as annual interim studies as well as more extensive triennial reports that include chapters on each of the primary causes of death. Before the reports are released, national and provincial stakeholder workshops are held to identify the important data-driven recommendations that must be adopted in order to reduce the MMR in South Africa. Reports are distributed to provinces, districts, and academic institutions, along with educational workshops on the important recommendations. The procedure is confidential and all copies of case notes are destroyed when the findings are published. The information gathered through the enquiry and specialized notification forms is intended solely for use in the CEMD process and cannot be used for medico-legal or disciplinary proceedings, which, when they arise, are wholly different and parallel procedures. Relevant judicial bodies ratify this.

Data from the 2010 to 2013 Confidential Enquiries into Maternal Deaths Report indicate that the main causes of maternal deaths were related to challenges of the health care system, failure to use health care facilities, inadequacy of services and substandard care related to knowledge and skill of the health care providers. According to the National Department of Health (NDOH) annual performance plan 2013/2014 report, the maternal mortality ratio was 310 per 100,000 live births. However, the institutional maternal mortality ratio was 146.71 per 100,000 live births in 2012 according to the 10th Interim Report of the NCCEMD (NDOH 2015:13). Establishing the causes

of maternal deaths during 2010 to 2013 was done by the independent provincial assessors based on clinical assessment of the patient's file and facility report as well as on post-mortem results when performed with available results. For the 2017-2019 triennium, only 30.1% of maternal deaths had post-mortems, reflecting the national shortage of anatomical and forensic pathology services, particularly in some provinces.

2.8.4 Causes of maternal deaths in South Africa

The fact that most sub-Saharan African countries including South Africa did not meet the 2015 target of improving maternal, neonatal and child health is a major public health concern (Mabaso, Ndaba & Mkhize-Kwitshana 2014:182). There has been a progressive and consistent decline in maternal mortality throughout the nine provinces in all the main underlying causes of maternal death, with the exception of medical and surgical early pregnancy illnesses such as ectopic pregnancy and unsafe abortions. In 2019, the institute/facility Maternal Mortality Ratio (iMMR) decreased to 100 per 100,000 live births for the first time in NCCEMD history. In 1998, the District Health Information System estimated the MMR as 150/100000 live births. For the 2017-2019 triennium, the MMR was 113.8 per 100,000 live births (NDOH 2020:5).

The four main underlying causes were the same in all provinces, but in different order (see Table 2.6). Non-pregnancy-related infections, pregnancy-related hypertension, medical and surgical and obstetric haemorrhage were identified as the major causes of preventable maternal death. As the incidence of other disorders has reduced, medical and surgical conditions have emerged as a key underlying cause of mortality. These conditions comprise 66.7% of the possibly and probably preventable maternal deaths. The four conditions have many common preventable factors that are mostly related to the knowledge and skills of the health care providers and the challenges within the health care system (NDOH 2020:5).

The medical conditions include HIV, while surgical conditions include the unsafe termination of pregnancy. Suicide is classified as a miscellaneous category causing maternal deaths. There is a challenge with the reporting and classification of maternal death. For example, suicide has been labelled as medical or surgical conditions, adverse drug effects, or coincidence. These are maternal deaths that occurred from drug overdose such as supplements and analgesics. This

could have obscured the scope of the problem, which is perceived as worsening. Deaths in the first trimester, namely miscarriage and ectopic pregnancy, are the fifth most prevalent causes, respectively, but have progressively increased over the triennia, making them a rising concern (NDOH 2020:34). Table 2.5 lists the MMR per underlying cause and province between 2017 and 2019.

Table 2.5 Maternal Mortality Ratio per underlying cause and province, 2017-2019

Primary obstetric problems	Eastern Cape	Free State	Gauteng (corrected)	KwaZulu-Natal	Limpopo (Corrected)	Mpuma-langa	North West	Northern Cape	Western Cape	South Africa
Medical and surgical disorders										
Non-pregnancy-related infections										
Ectopic pregnancy	1,61	4,29	4,43	3,72	5,94	6,32	6,31	4,70	2,03	4,19
Miscarriage	3,87	15,00	7,80	6,76		13,05		6,65	9,17	7,84
Pregnancy-related sepsis	1,01	7,18								
Obstetric haemorrhage	6,45	9,29	6,22	5,24	6,52	4,21	8,03	0,00	5,74	5,99
Hypertensive disorders of pregnancy	2,58	6,43	1,76	3,21	2,88	3,37	1,72	4,70	1,69	2,72
Anaesthetic complications	22,89	31,43	16,28	12,34	28,61	26,95	22,93	26,65	7,09	19,11
	20,96	40,00	22,27	13,35	23,12	23,58	32,68	29,79	8,44	20,73
Adverse drug reactions	1,61	0,00	0,85	0,68	1,84	0,00	0,57	0,00	1,01	0,89
Embolism	5,16	2,14	2,04	2,37	5,36	4,21	2,29	9,41	5,40	3,60

Acute collapse - cause unknown	4,51	0,71	3,08	2,37	2,62	1,26	2,87	0,00	1,69	2,53
Miscellaneous	0,64	0,00	0,79	0,17	1,27	0,00	1,15	1,57	1,69	0,74
Unknown - in facility	2,90	2,86	0,91	5,41	0,54	1,26	0,57	1,57	1,01	2,14

Source: NDOH (2020:34)

Key

	Most common
	2nd most common
	3rd most common
	4th most common

The provinces that are mainly rural have the highest number of conditions up to 15% above the national average (see Table 2.6). The referral network is operating with the lowest mortality in primary care, which rises dramatically as care levels rise (see Table 2.6). Private hospital deaths were omitted since there was no denominator for private hospital births (NDOH 2020:37).

Table 2.6 Number of maternal deaths per underlying category and level of care (corrected for Limpopo and Gauteng), 2017-2019

Adjusted for Gauteng and Limpopo	CHC	District hospital	Regional hospital	Tertiary hospital	National central hospital	Total
Medical and surgical disorders	11	76	125	118	108	438
Non-pregnancy-related infections	8	194	288	154	93	737
Ectopic pregnancy	4	43	30	21	11	109
Miscarriage	1	58	72	43	22	195
Pregnancy-related sepsis	2	20	67	42	27	157
Obstetric haemorrhage	21	163	184	78	48	493
Hypertension	21	100	191	131	102	545
Anaesthetic complications	0	42	15	7	9	73
Adverse drug reactions	0	6	3	11	4	25

Embolism	5	24	26	22	5	82
Acute collapse - cause unknown	7	25	15	12	3	62
Miscellaneous	0	4	5	4	4	18
Unknown	10	22	21	8	0	61
Maternal deaths	91	776	1040	652	436	2996

Source: NDOH (2020:22)

The causes of preventable maternal deaths in South Africa during the intrapartum period in 2020 were obstetric haemorrhage (89.5%), pregnancy-related sepsis (76.4%), ectopic pregnancy (75.2%), hypertensive disorders in pregnancy (70.6%) and miscarriage (64.9%) (NDOH 2020:34). According to the Saving Mothers 2020 report on confidential inquiries into maternal deaths in South Africa, the causes of preventable maternal deaths included patient delay in seeking medical help, transportation problems from home to facility, and no or infrequent antenatal care attendance. The lack of suitably qualified doctors and nurses, inadequate assessment, acknowledgment of the problem, and substandard care were all key administrative problems (NDOH 2020:34). According to the data, 63.4% of maternal deaths could have been avoided. The obstetric multidisciplinary team is the first line of defence in the labour and delivery unit, and they are crucial in the postpartum care of women.

Although maternal mortality has declined in South Africa, HIV infection in pregnant women remains the leading cause of maternal mortality (Tlou 2018:7). However, in 2006, when the antiretroviral medication (ART) rollout programme began in most communities, maternal fatalities fell significantly. The ART programme's success in lowering maternal mortality gives reason for optimism, which is strengthened by the fact that HIV status is not a substantial risk factor for maternal deaths. Tuberculosis remains a contributory cause of maternal deaths, even among those who are receiving treatment (Tlou 2018:6-7). Most maternal deaths related to tuberculosis are due to opportunistic infections such as being HIV-positive. In their two-year retrospective study at Natalspruit Hospital, Johannesburg, Uzabakiriho and Maswime (2019:412) found 20,676 live births with 79 deaths and an MMR of 382.08/100,000. Of the women, 44 (56%) were HIV- positive, 14 (21%) died of obstetric haemorrhage, and 12 (15%) had hypertensive disorders of pregnancy; 30 (38%) had not attended an antenatal clinic, and most (88%) had at least one

avoidable factor. Most deaths occurred after normal working hours (Uzabakiriho & Maswime 2019:414.

In a study on the underlying determinants of maternal mortality in a rural South African population with a high HIV prevalence between 2000 and 2014, Tlou (2018:9) found that approximately 54% of the women refused to test for HIV. In addition, results from population viral load surveys in the area showed that the viral suppression level among females increased from 28.2% in 2000 to 44.7% in 2014. Between 2000 and 2014 the proportion of women with HIV who were on antiretroviral therapy (ART) increased from 29% to 49%; tuberculosis was the leading cause of death among HIV/AIDS patients on ART treatment. Approximately 8% of the women were HIV-positive and the majority (78.5%) had only primary or no education. The findings highlighted the importance of knowing one's HIV status before, during, and after pregnancy. Early HIV diagnosis and treatment could lead to improved outcomes for both mother and newborn.

In 2014, Mabaso, Ndaba and Mkhize-Kwitshana (2014:185) found that the five key causes of maternal deaths in South Africa were administrative flaws, such as poor transportation; a lack of healthcare facilities and appropriately trained staff; patient-oriented matters, such as no antenatal care (ANC) or infrequent ANC attendance and delay in seeking medical help; healthcare worker-oriented issues, such as healthcare provider failure to follow protocol (delay in referring patients) and poor initial assessment and recognition/diagnosis, and communication problems.

2.9 STRATEGIES TO REDUCE MATERNAL MORTALITY IN SOUTH AFRICA

In 2013, the WHO launched the Maternal Death Surveillance and Response (MDRS) guidance. The purpose of the MDRS is to prevent future maternal deaths by learning from previous deaths. This is done by identifying and studying each death, then developing and enacting recommendations to prevent future deaths from similar causes (WHO, 2013). The MDRS is a continuous surveillance linking the health information system and quality improvement processes from local to national level (Mathai, Dilip, Jawad & Yoshida 2015:54). The goal of MDRS is to provide information that can effectively guide actions to end preventable maternal mortality in health facilities and communities (Mathai et al 2015:54). Every maternity department should have an MDRS committee consisting of midwives and doctors who meet to investigate and analyse the causes of maternal deaths. The goal is to determine whether the maternal death could have been

avoided and to develop a quality improvement strategy to prevent future avoidable fatalities. A preventable intrapartum death is a possible and probable potentially avoidable maternal death due to substandard care and missed opportunity (NDOH, 2020). A preventable intrapartum maternal death implies that an opportunity was present to prevent the maternal deaths however the opportunity was missed.

According to Cook and Sprague (2019:1769), the Maternal Mortality Ratio (MMR) is a crucial measure of a country's health and hence a vital performance indicator of a healthcare system's strength and quality. Maternal death that could have been avoided implies poor maternal health or insufficient treatment throughout pregnancy, labour, and puerperium. Potential preventable maternal death usually indicates either poor maternal health or inadequate care during pregnancy, childbirth and puerperium (Cook & Sprague 2019:1768). By 2030, the worldwide average MMR should be less than 70/100,000 live births, while the national aim should be 140/100,000 live births (WHO 2015:6). For the 2017-2019 triennium, the maternal mortality ratios for South Africa, Gauteng Province, and Ekurhuleni Metropolitan were 113.8, 123.14, and 148.55 maternal deaths per 100,000 live births, respectively (NDOH 2020:56). In 2021, the maternal mortality rate in the selected public hospital where this study was done was 145 maternal deaths per 100,000 live births. According to the hospital Maternal Death Review Committee, 90 maternal deaths per 100,000 live births could have been avoided (Maternal Death Register, 2021).

2.9.1 National strategy for maternity care

The death of women during pregnancy, childbirth and the puerperium remains a major public concern (Moodley, Fawcus & Pattinson 2018:s4). Despite progress, ending preventable maternal deaths (PMD) remains an unfinished agenda and one of the world's most pressing problems (WHO 2015:2). Although maternal mortality has declined by 45 percent globally since 1990, 800 women die per day from largely preventable reasons prior to, during, and after childbirth (WHO 2015:2). South Africa has made significant progress in reducing maternal mortality from 189 per 100,000 live births in 2009 to 134 per 100,000 in 2016 (NDOH 2020:17).

The South African health system's mission is to reduce maternal and child morbidity and death as quickly as possible by implementing evidence-based interventions that are critical to improving maternal health and child survival. One of the goals is to accelerate the implementation of key recommendations and strategies to reduce maternal and child morbidity and mortality by effective

advocacy for quality maternal and child health care, strengthening the health system, community empowerment and involvement, and effective collaboration with partners and relevant stakeholders (NDOH 2016:9). Overall, 62.4% of maternal deaths were potentially preventable, with the major underlying conditions being anaesthetic-related (93.3%), obstetric haemorrhage (89.5%), pregnancy-related sepsis (76.4%), ectopic pregnancy (75.2%), hypertensive disorders (70.6%), and miscarriage (64.9%). This has remained unchanged (NDOH 2020:41). In South Africa, the Saving Mother's Reports on Confidential Enquiries into maternal death (NDOH 2020:9-15), the National Guidelines for Maternity Care (NDOH 2015:45-67), and the SANC's (2005:13-16) scope of practice of midwives are available strategies to prevent maternal deaths.

In South Africa quality intrapartum care remains a priority, particularly in public hospitals. The WHO (1988) Safe Motherhood Initiative introduced measures to ensure quality intrapartum care in order to reduce maternal deaths. The SDG3 recommendations, the National Department of Health's 2006 prevention of mother-to-child transmission (PMTCT) programme and 2015 guidelines for maternity care in South Africa and basic antenatal care, the use of the partogram have been implemented to improve maternal and neonatal outcomes. However, maternal deaths remain high and have not yet reached the national target. Following an analysis of the causes of preventable maternal and neonatal mortalities, the National Department of Health's key recommendations from the Saving Mothers Reports by the National Committee for Confidential Enquiries into Maternal Deaths (NCCEMD) are discussed next.

2.9.2 Five focal points to reduce maternal deaths

The Saving Mothers Reports from 2010 to 2013 and 2017 to 2019 identified three factors that contribute to the majority of preventable maternal deaths, namely non-pregnancy-related infections, obstetric haemorrhage, and pregnancy-associated hypertensive disorders (NDOH 2016:12; NDOH 2020:5-11). The three disorders share a number of avoidable variables, most of which are related to health care workers' knowledge and skills, as well as health care systemic challenges. The NCCEMND Committee's recommendations are summarised into five main points: HIV, haemorrhage, hypertension, health worker training, and strengthening the health system.

In their overview of maternal, neonatal and child deaths in South Africa, Mabaso, Ndaba and

Mkhize-Kwitshana (2014:187) emphasised that improving maternal, newborn and child survival

depends on the ability to reach women, newborns and children with effective interventions; the provision and use of timely data on quality of care, and monitoring and evaluation of health outcomes. The successful implementation of maternal intervention packages requires establishing and maintaining stakeholder partnership strategies to ensure sustainability in the continuum of care. This involves strengthening the continuum of care linking home, community, primary health care, regional and district hospitals by ensuring the availability of the right care in the right place at the right time at each level (Mabaso, Ndaba & Mkhize-Kwitshana 2014:187).

South Africa is committed to addressing issues of inequality through providing universal coverage for maternal interventions and by identifying and targeting the poorest and under-served areas. Five focal points need to be prioritized, namely improving knowledge development, quality of care and coverage of reproductive health services, establishing norms and standards, and facilitating community involvement (NDOH 2020:38).

2.9.2.1 Improve health workers training

To improve maternal and neonatal outcomes requires that maternity units, including labour wards, should be equipped with knowledgeable and skilled health care providers. This entails strengthening human resources for maternal and child health by providing training on Essential Steps in Management of Obstetric Emergencies (ESMOE), anaesthetic modules and emergency simulation training to doctors and midwives (NDOH 2020:11). The Essential Steps in Managing Obstetric Emergencies (ESMOE), a skills-and-drills programme, was created in 2008 to train all maternity care providers. The programme was developed in partnership with the Liverpool School of Tropical Medicine and is based on the Life Saving Skills Emergency Obstetric and Newborn Care programme. In 2012, funding became available to expand the training programme (Pattinson, Bergh, Ameh et al 2019:241). Despite the initiatives proposed by the NECCEMD committee, maternal mortality in South Africa remains high, although there has been improvement since the inception of the ESMOE. In a study on midwives' experiences regarding quality intrapartum care in the North West Province, Moroka (2020:10) found that the midwives faced challenges, including poor midwifery care, consistent poor recording of observations, poor labour management, and poor decision-making skills.

Doctors and midwives should be trained on how to manage pregnant women with HIV advice,

counselling, testing and support initiation of HAART, monitoring of HAART and the recognition,

assessment, diagnosis and treatment of severe respiratory infections. The midwife and doctor should be skilled, informed, technically competent, and able to provide evidence-based practice at all times to improve intrapartum outcomes. Midwives and doctors should be empowered with skills so that they are competent to implement immediate measures for obstetric emergencies at all levels of care. All new staff must be trained in ESMOE and two-yearly updates and skill drills given for staff in maternity facilities (NDOH 2020:11).

In a study in North West Province, Moroka (2020:10) found inadequate initial evaluation, poor problem identification, inappropriate management, infrequent monitoring, and prolonged abnormal monitoring with no action by the midwives, which indicated that they were not following established standards. A well-structured training programme would increase service quality and lower maternal mortality rates. Maternal mortality can be reduced by increasing the competence and confidence of healthcare personnel to operate effectively and efficiently to provide emergency obstetric care. In their before-and-after observational study on reducing maternal deaths by skills-and-drills training in managing obstetric emergencies, Pattinson et al (2019:241) found progress in the maternal and neonatal outcomes. Facilities that conducted skills-and-drills training showed great change and improvement. This indicated the efficiency and success of the programme (Pattinson et al 2019:244). Although there was a considerable decline in maternal deaths since the majority of healthcare personnel involved in maternity care had been trained, training by itself will not result in the overall reduction sought.

Complementary reforms in the broader health system are required for optimal efficacy. According to the NDOH (2020:38), 72.2% of maternal deaths were mothers who had attended antenatal care but only 54% had attended before 20 weeks. The majority of women who died from medical and surgical conditions, hypertensive disorders, non-pregnancy-related infections, and obstetric haemorrhage had attended an antenatal clinic, but many had attended late in their pregnancy. This indicated problems with antenatal attendance. As indicated by the non-significant reduction in maternal mortality owing to hypertension, health system strengthening is also required. Changes in the healthcare system, such as better emergency transport or working operating rooms, will aid physicians with the knowledge and abilities to use them as effectively as possible to reduce maternal deaths. As part of the healthcare system's functioning, initial training should be followed by supportive supervision and mentorship.

Lack of appropriately trained staff or a shortage of doctors and nurses were major administrative problems. Obstetric haemorrhage, ectopic pregnancy, and hypertensive disorders in pregnancy

were the most common problems resulting in maternal mortality due to a lack of staff, with 20.5% of deaths attributable to a lack of doctors and 13.7% due to a lack of nurses at community health centres and district hospitals, as well as failure to follow established protocols at district hospitals, regional hospitals, and tertiary hospitals, due to poor clinical practices or overwhelmed services. According to the Saving Mothers Report, 2020 (NDOH 2020:38), suboptimal assessments after vaginal delivery, women transferred out in shock to the postnatal ward after caesarean delivery, discharged from theatre with abnormal vital signs, discharged home from postnatal wards with tachycardia, or the patient being discharged by junior staff or not done at all contributed to preventable maternal deaths.

At least one on-site trainer should be available to run the required ESMOE modules and drills in each hospital and CHC. Ensure that there are functional communication channels in place for consultations with and referrals to higher levels of care, such as the "Vula App". Specific requirements must be met and documented before a patient can be discharged from a ward or hospital (NDOH 2016:15-17). Every district hospital must designate at least one doctor as an anaesthetic lead, who will be responsible for acquiring and maintaining acceptable anaesthetic capabilities for the district hospital level, including general anaesthesia skills. This doctor should be responsible for mentoring and training the remaining doctors at the hospital to ensure that safe anaesthesia can be administered for caesarean deliveries and ectopic pregnancy laparotomies.

2.9.2.2 Strengthen the health system

A well-functioning health system is required to provide comprehensive, high-quality, respectful obstetric care in South African health districts (Oosthuizen, Bergh & Pattinson 2019:910). In North West Province, Moroka (2020:86) found that infrastructure, including limited space and patient overcrowding, were among the factors affecting the assessment and monitoring of patients during the intrapartum period. Strategies and interventions are needed to strengthen the health system, particularly measures to improve the performance of primary health care services and the district health system. The interventions in the NDOH strategic plan 2015-2019 reflect and assist the PHC re-engineering process. The three strands of PHC re-engineering, namely the creation of ward-based PHC outreach teams, the extension and enhancement of school health services, and the formation of district clinical specialist teams, will help to improve mother and child health

(NDOH 2016:18). Health worker training and health system strengthening are essential to achieving the reduction of the maternal deaths caused by HIV, haemorrhage, and hypertension (NDOH 2020:2).

Poorly functioning health systems and local health system limitations impact many women giving birth (Oosthuizen, Bergh & Pattinson 2019:910). Ward-based PHC outreach teams will play an important role in delivering community-based MCWH services to communities and households, as well as facilitating access to PHC and hospital services. Strengthening school health services will help children and youth achieve better health and learning outcomes, while district clinical specialist teams, which will include an obstetrician, a paediatrician, a family physician, an anaesthetist, an advanced midwife, an advanced paediatric nurse, and a PHC nurse, will play a key role in ensuring quality MCWH services at all levels within the district, with a particular focus on ensuring MCWH services are provided at all levels. The national strategies outlined in the maternity guidelines and Saving Mothers Reports in South Africa include appropriately resourced and accessible health care facilities, equipment and human resources, rapid inter-facility emergency transport system, ensuring 24-hour access to functioning emergency obstetric care with basic and comprehensive care, and provision of appropriate contraceptives that are accessible to all women and integrated into all levels health care (NDOH 2016:15-16 and 2020:15). Moroka (2020:87) found that transportation for inter-facility emergency transfers remains a problem in public hospitals,

According to the NDOH (2020:39), approximately 46.8% of maternal deaths occurred at community health centres, with 1% due to referral problems; about 51.4% of maternal deaths were managed at a district hospital, of which 8% were due to referral problems. At regional hospitals 41.8% were managed and 33.6% died, with 27% due to referral problems. Tertiary hospitals accounted for 34.5% of maternal mortalities. There is a need to strengthen the health care system to achieve optimum outcomes for both mother and newborn.

The provision of quality care to all pregnant women at district level requires a well-coordinated referral system with access to transportation and facilities. Ensure there are clear referral criteria for obstetrics specifying which women must be referred from primary level to district hospital level, and which women must be referred from district to specialist level. These criteria must be known to all relevant health workers at both the referring and receiving facilities. On-call rosters for doctors at hospitals must be shared with all referring facilities in the catchment area (NDOH 2020:10). Every district hospital must have a designated obstetrics and gynaecology specialist at

their referring facility who they can consult with directly for advice about patient management, protocols etc. All possible measures to stabilize mothers for that specific level of care should be performed prior to referral. Work with ambulance services to ensure appropriate prioritisation of bleeding patients and the availability of urgent paramedic assisted ambulances. Management of all cases of patients with hypertensive disorders should be discussed at least telephonically with an obstetrics and gynaecology specialist. Wi-Fi for all staff should be installed at all health facilities to facilitate consultation with referral centres, participation in virtual audit meetings and virtual training sessions (NDOH 2020:10).

When called to an obstetric emergency, such as pre-eclampsia, the doctor on call must promptly attend to the patient in person. If unable to do this due to a concurrent clinical commitment, the second on-call must be called and come in person. For all obstetric emergencies, at least one doctor must stay with the patient until the vital signs have stabilised. At the change of shift, doctors and midwives covering labour wards must always hand over in person to the team starting the new shift, and the hand over must include a summary of each patient in the labour ward as well as a detailed review of any critically ill patient. Improve effectiveness of the facility and district morbidity and mortality meetings, and ensure input from senior clinical personnel and managers (NDOH 2020:10).

2.9.2.3 Reduce death due to HIV

Considered a multi-systemic disease, HIV can cause organ failure due to nephropathies, cardiomyopathies, neuropathies, and bone marrow suppression, among other conditions. Additionally, opportunistic infections like TB, cryptococcus, viral hepatitis, and cervical cancer are more prevalent among pregnant HIV-positive women (Wium et al 2019:27). Preventive measures must be promoted in communities and the healthcare industry, such as knowing your status and organizing your pregnancy, while ensuring non-judgmental approaches. Healthcare professionals should receive training in maternity care, including HIV counselling, testing, and starting HAART. Healthcare professionals should be instructed on HIV screening and treatment procedures as well as how to actively screen for HIV co-illnesses and treat them, particularly respiratory infections like tuberculosis.

Intensify management of HIV-positive mothers and children by improving access to treatment for

both mothers and children, improving management of co-infections and eliminating mother-to-

child transmission of HIV, and training health care providers working in maternity care on the new HIV, TB and ART guidelines (NDOH 2020:11). HIV-positive pregnant women who are acute or chronically unwell need thorough investigation for TB and other opportunistic infections with early involvement of internal medicine and infectious specialists. In order to combat maternal deaths due to HIV, it is vital that health facilities implement the updated PMTCT protocol for better HIV management and TB detection (NDOH 2020:11). The present single-tablet regimen makes HIV treatment for HIV-positive women simple. This simplicity of treatment for HIV-positive women is likely to have contributed to the significant decline in non-pregnancy-related infection deaths (Pattinson et al 2019:244).

2.9.2.4 Reduce death due to haemorrhage

In South Africa, the rate of direct maternal mortality has declined considerably, especially for severe haemorrhage. The benefit of ESMOE education was in treating women who were in shock, had severe bleeding, or diseases unrelated to pregnancy. The prompt management of shock depends on few factors other than the clinician's knowledge and experience. Following ESMOE training, maternal mortality among women who had caesarean deliveries significantly decreased, particularly haemorrhage during and after the procedure was severely reduced. The ESMOE course discusses specific methods for addressing bleeding after a caesarean delivery (Pattinson et al 2019:244).

Sepsis and haemorrhage are linked to prolonged labour, but occur less commonly than frequently assumed (NDOH 2020:29). Community education, prevention of prolonged labour, prevention of anaemia, adoption of safe methods for induction of labour, and active management of the third stage of labour are preventive strategies for obstetric haemorrhage. Severe obstetric haemorrhage should be treated as a "major alert" requiring a multidisciplinary approach to resuscitation and a stepwise approach to arresting and controlling bleeding. For health care providers, Emergency Obstetric Simulation Training (EOST) focuses on the prevention, management and control of haemorrhage. Every hospital and CHC must have at least one ESMOE trainer among their staff, who is given time to conduct regular training and fire drills. Continued implementation of ESMOE/EOST training, safe caesarean delivery protocol, updated PPH algorithms, and use of massive obstetric haemorrhage transfusion protocol are essential. PHC staff should undergo the first level referral for antenatal care course to enable review of all

pregnant women during antenatal care and facilitate detecting complications and suitable referrals (NDOH 2020:11).

There must be regular training of doctors and nurses in emergency resuscitative management of circulatory shock in the context of early pregnancy (ectopic and miscarriage) and PPH (NDOH 2020:11). This should include regular EOST drills on the management of shock. There must be regular training of doctors and nurses on the recognition and management of ectopic and different types of miscarriage, including indications and techniques for evacuation of the uterus, and criteria for referral to specialist level. Single operator evacuation of the uterus under sedation must not be performed. There must be continued training and up-skilling of anaesthetists, particularly on airway management and the recognition of shock and its management under anaesthesia. Anaesthetists performing regional anaesthesia must also be competent in general anaesthesia (NDOH 2020:11).

2.9.2.5 Reduce death due to hypertension

Pregnant women and their families must be informed of pre-eclampsia warning symptoms. In the event of an emergency, medical professionals must manage Mom Connect usage as well as any transportation issues, particularly in rural locations. Communities need to be informed about contraception, booking early for antenatal care, recognizing and managing early pregnancy danger signs. Services for family planning and contraception, including safe TOP, must be promoted and made accessible to reach everyone who could benefit from them, including youth (NDOH 2020:13)

As part of promoting preventive measures, all maternity facilities should provide calcium supplementation to all women throughout antenatal care and ensure early detection, referral and timely delivery of women with hypertension and severe hypertension in pregnancy. Health care professionals should be involved in emergency obstetric simulation and training drills on severe hypertension, imminent eclampsia and eclampsia, and HELLP syndrome must be recognised as life threatening requiring urgent attention (NDOH 2020:12). All maternity facilities must be able to administer magnesium sulphate to prevent convulsions, administer rapid acting agents to lower severely raised blood pressure, provide close monitoring prior to and following delivery, and manage fluid balance safely. Health workers should promote family planning services in the

population at large, including women, their partners, families and communities.

If a woman's systolic blood pressure (BP) is less than 100, her pulse greater than 110, and she is bleeding, she should not be discharged from the labour unit to the postnatal area. If any abnormal vital signs are recorded, such as a heart rate >100, no woman should be discharged from the hospital, and women with any symptoms or signs suggestive of sepsis or cardiac failure should be readmitted immediately. When women are discharged from the hospital, they must be informed about the indicators of infection and what to do if they are discovered. Casualty departments must have clear protocols guaranteeing that gynaecological patients in shock receive the same level of priority and attention as any other category of patients in shock. Maternity health workers must accept responsibility for gaining and maintaining their positions. Maternity health workers must take responsibility to gain and maintain the knowledge and skills required to prevent maternal deaths including surgical skills, anaesthetic skills, as well as management of labour and obstetric emergencies (NDOH 2020:12). This applies to sessional doctors as well as full-time workers. Slight elevations of BP (135-139/85-89) women should be asked to return for a BP check within 3 to 7 days. Sessional doctors at clinics need ESMOE training on hypertension disorders in pregnancy. Women should be screened for mental health conditions and gender-based violence at the first ante-natal visit. Some women may require ongoing support at subsequent visits. Ensure that in young women, early pregnancy is seen as an emergency, and a detailed history of herbal medications and screening for suicide is considered. Facility managers must ensure that all doctors and nurses are aware of their professional and ethical responsibilities when on duty, and they must be held accountable when these responsibilities are neglected (NDOH 2020:12).

Ensure problems identified are addressed locally and at higher levels, when required. Women with pre-eclampsia with severe features must be examined diligently prior to hospital discharge and ensure that both the blood pressure and pulse rate are normal. Patients with hypertensive disorders in pregnancy must continue their antihypertensive agents following hospital discharge and be seen again within 5-7 days at the site of delivery. In addition, all women with pre-eclampsia with severe features must have their laboratory studies and a complete cardiovascular examination preferably an electrocardiogram (ECG) and X-ray chest if they have had an early onset pre-eclampsia or chronic hypertension, to exclude cardiomyopathy. Following hypertension with severe features, senior advice should be sought before discharge and patients provided with antihypertensive medications (NDOH 2020:12).

2.10 ESSENTIAL RECOMMENDATIONS BY THE NATIONAL COMMITTEE FOR CONFIDENTIAL ENQUIRIES INTO MATERNAL DEATHS (NCCEMD)

In 2019, the National Committee for Confidential Enquiries into Maternal Deaths (NCCEMD) made essential recommendations to assist health care facilities in reducing maternal deaths. The NCCEMD's mission is to identify the leading causes of maternal death and to produce guidelines and a quality improvement strategy to reduce maternal mortality (NDOH 2020:8). The recommendations are contained in the 2017-2019 Saving Mothers triennial report. Contraception services need to be expanded to include the postpartum intrauterine contraceptive device (IUCD) insertion and long-acting reversal contraception and ensuring contraceptive availability at all facilities caring for women and at high-risk medical clinics. All hospitals must be able to provide termination of pregnancy services to ensure that all women have access to safe Termination of Pregnancy (TOP). Medical TOP must be available at but not restricted to dedicated TOP clinics (NDOH 2020:9). Set up an early pregnancy expert group to develop a strategy for improving management of early pregnancy and its complications, such as miscarriage and ectopic pregnancies. Provide early pregnancy counselling services and access to safe termination of pregnancy. Ensure early initiation of antenatal care after pregnancy diagnosis and screening for mental health issues and identifying women at risk of suicide. Restructure antenatal care to ensure that every problem case is reviewed on-site prior to referral by the most experienced midwife, and that all pregnant women have their pregnancies reviewed by the most experienced and knowledgeable midwife at least once between 28- and 34-weeks' gestation (NDOH 2020:8).

Ensure Essential Steps in the Management of Obstetric Emergencies (ESMOE) (including anaesthetic ESMOE) training for all new staff and two-yearly updates for existing staff. Conduct EOST drills/exercises monthly in maternity facilities, especially at primary care and district hospital level as the rarity of conditions makes doing emergency drills essential to maintain skills. Each hospital and CHC should have at least one on-site trainer able to run the relevant ESMOE modules and drills. Ensure functional communication channels exist for consultation with and referral to higher levels of care; for example, using the "Vula App". Prior to discharge from a ward and facility, specific criteria must be met and documented (NDOH 2020:7-8).

All women in the reproductive age group should receive advice on contraception, and long-acting reversible contraception methods should especially be promoted. All health professionals must ensure that they discuss family planning with women in the antenatal period (especially those over 35 years old) and ensure that the women's family planning requests are followed through at

delivery or post-delivery. Contraceptive counselling should begin at school level and contraceptive services should be available at times convenient for school-going girls, higher educational facilities and working women. Innovative strategies, such as tele-medicine, must be devised to achieve this, with collaboration between the Departments of Health and Education. Use of postpartum Intrauterine Contraceptive Device (IUCD) should be promoted in all facilities performing deliveries to prevent unintended pregnancies and ensure safe conception in women living with HIV. This requires the integration of family planning counselling and provision within the HIV care and ART service (NDOH 2020:13).

Ensure safe conception issues are discussed with women in the reproductive age attending care for chronic medical conditions, such as diabetes, and heart disease. All tertiary education institutions must have on-site or easy access to sexual and reproductive health services including contraception and safe TOP for students. To prevent unwanted pregnancies which could lead to unsafe TOP, there is a need to institute adolescent contraceptive clinics. The priority should focus on early pregnancy by setting up an expert group to develop strategies for improving management of early pregnancy issues, such as miscarriage and ectopic management, early pregnancy counselling service and access to safe TOP, earlier initiation of antenatal care after pregnancy diagnosis, screening for mental health and identifying women at risk for suicide. Expert review must be done at 28 weeks with the availability of next level of expertise.

The NECCEMD strongly recommend on-site midwife-run birthing units (OMBU) for faster access to labour wards, especially in areas where it is difficult to reach the nearest hospital. It is essential to introduce these units as they will allow for decongestion of overcrowded hospital labour wards, grouping of skills, reduction in caesarean deliveries, allow doctors to concentrate on the sick women, and avoid emergency transport problems. Providing access to the next level of expertise at a PHC clinic allow all women's pregnancies to be reviewed and enhance communication with receiving hospitals.

This involves installing Wi-Fi for all staff at all health facilities, to facilitate consultation with referral centres, participation in virtual audit meetings and virtual training sessions. Outreach to the referring hospitals in the catchment areas must be part of the job description of all specialists in obstetrics and gynaecology and anaesthetics (NDOH 2020:9).

2.11 CONCLUSION

This chapter described the context of the study, including the national context, South African health care system, historical perspective and health challenges, the training and legislation of nurses and midwives, maternity care in South Africa, disease profiles of pregnant women, and the current strategies to reduce maternal deaths in the South African health context. Despite the decrease in maternal mortality and MMR, the MMR remains high, indicating that a number of problems have not yet been resolved, including health care services and delivery and enhancing the quality of care at district, regional, and provincial tertiary hospitals.

There is a need for health policy initiatives to focus on improving the socioeconomic conditions of rural women and providing effective and efficient services for them, especially to attain SDG3 of reducing the maternal mortality rate by 2030.

Chapter 3 discusses the research design and methodology of the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

Chapter 2 described the context of the study, including the national context, South African health care system, historical perspective and health challenges, the training and legislation of nurses and midwives, statutory body for medical doctors in South Africa, maternity care in South Africa, disease profiles of pregnant women, and the current strategies to reduce maternal deaths in the South African health context.

This chapter discusses the research design and methodology of the study, including the aim and objectives, and research questions, and the phases of the study.

3.2 THE RESEARCH AIM AND OBJECTIVES

The aim of the study was to implement intrapartum guidelines to reduce preventable maternal deaths at a selected public hospital in Gauteng province. In order to achieve the aim, the objectives were to:

- Determine the factors contributing to preventable intrapartum maternal deaths at the selected public hospital.
- Implement intrapartum guidelines to reduce preventable maternal deaths at the selected public hospital.
- Evaluate the outcomes of the implemented intrapartum guidelines to reduce preventable maternal deaths at the selected public hospital.

Accordingly, the study wished to answer the following questions:

- What are the factors contributing to preventable intrapartum maternal deaths at the selected public hospital?
- What intrapartum guidelines can be implemented to reduce preventable maternal deaths at the selected public hospital?
- What were the outcomes of the implemented intrapartum guidelines to reduce preventable maternal deaths at the selected public hospital?

3.3 CONCEPTUAL FRAMEWORK

A framework is “an abstract, logical structure of meaning” (Gray, Grove & Sutherland 2017:24). A conceptual framework deepens understanding of the phenomenon under study and is crucial for knowledge on the phenomenon (Polit & Beck 2021:183). According to Polit and Beck (2021:183), a conceptual framework consists of a set of propositions about the interrelationships among concepts, arranged in a logically interrelated system that permits a new statement to be deduced from them.

This study was guided by the WHO quality of care framework for maternal and newborn health (Tuncalp, Were, MacLennan et al 2015:1046). The researcher chose this framework because quality maternal health care should lead to improvement in clinical processes that should yield good intrapartum outcomes. This framework guided the researcher in selecting essential maternity guidelines that were implemented to reduce preventable intrapartum maternal deaths at a selected public hospital in Gauteng province (see Figure 1.1 WHO quality of care framework for maternal and newborn health).

The WHO quality of care framework for maternal and newborn health indicates that the quality of care is drawn from three categories, namely structure, process, and outcomes. According to the WHO (2015), quality of care is the extent to which health care services provided to individual and patient populations improve outcomes.

3.4 THE RESEARCH DESIGN AND METHODOLOGY

A research design is the overall plan for addressing a research question, including specifications for enhancing the integrity of the study (Polit & Beck 2021:513; Sileyew 2019:1). The research design is a blueprint for conducting a study and indicates the basic strategies a researcher will use to answer the research questions (Brink, van der Walt & van Rensburg 2018:101). In this study, the researcher selected a mixed methods research design. Mixed methods studies collect and analyse qualitative and quantitative data to answer questions (Dawadi, Shrestha & Giri 2021:25, Polit & Beck 2021:516; Shorten & Smith 2017:74). Mixed methods studies are conducted when researchers want to generate quality data using multiple approaches to acquire more insight into the phenomenon under investigation (Makombe 2017:3373; Al-Ababneh 2020:88). When the two types of data are collected in phases, the design is sequential. In well- designed sequential designs, data collection in the second phase is informed by the analysis and interpretation of the data from the first phase (Polit & Beck 2021:519).

The researcher considered a mixed methods research design appropriate to generate quality data, acquire deeper insight, and evaluate the findings (Al-Ababneh 2020:88; Makombe 2017:3373; Sileyew 2019:1; Polit & Beck 2021:167). Accordingly, the researcher conducted the study in phases. Phase 1 audited patient files to collect quantitative data to determine the causes of preventable intrapartum maternal deaths at the selected public hospital. The maternal mortality ratio (MMR) formula was reported numerically. Phase 2 collected qualitative data from the implementation of intrapartum guidelines at the hospital. Phase 3 was qualitative and further evaluated the outcomes of the implemented intrapartum guidelines.

Research methodology is the plan for conducting the specific steps of a study. Research methods are the techniques or tools researchers use to collect, structure and analyse data systematically (Polit & Beck 2021:741). The research methodology includes the population, sample and sampling, and data collection, analysis and interpretation. In mixed methods research, quantitative and qualitative findings can be triangulated. Triangulation is a research strategy, which uses multiple methods or data sources to develop a comprehensive understanding of a research problem or to test validity through the convergence of information from different sources (Dawadi, Shrestha & Giri 2021:27). In this study, data collection in the second phase was informed by the data analysis and interpretation in the first phase (Polit & Beck 2021:519).

Phase 1 used a quantitative approach to audit selected intrapartum maternal death patient files to determine the causes of preventable intrapartum maternal deaths. Phases 2 and 3 used a qualitative approach to the implementation and evaluation of selected maternity guidelines to reduce preventable intrapartum maternal deaths at the selected public hospital in Gauteng. The researcher collected data using focus group interviews, observation, field notes, and reflective diaries.

The research strategy and methodology of each phase are discussed next.

3.5 PHASE 1: AUDIT OF PREVENTABLE MATERNAL DEATHS PATIENT FILES

In Phase 1, the researcher used a quantitative approach to determine the causes of maternal mortality of patients by retrospectively auditing and analysing patient files (Maternal Deaths Records) at the selected public hospital in Gauteng.

3.5.1 Population and unit of analysis

A population is the entire set of individuals or objects with some common characteristics that is of interest to the researcher (Polit & Beck 2021:747). A unit of analysis is the basic unit or focus of a researcher's analysis for the purpose of addressing the research problem and defines the boundaries of what is examined or ignored within the study (Polit & Beck 2021:747; Ritella, Rajala & Renshaw 2021:1).

The researcher used a quantitative approach to determine the causes of maternal mortality of patients, by retrospectively auditing and analysing patient files at the selected public hospital in Gauteng. The researcher obtained permission from the Chief Executive Officer of the selected public hospital to access and use the Maternal Deaths Register to retrieve patients' files that met the inclusion criteria. To be included in the study, the patients had to have died between 2018 and 2021 and the death had to have been recorded as a preventable intrapartum maternal death in the hospital maternal deaths register.

The patient files were reviewed to assess the causes and avoidable factors of intrapartum maternal deaths in the selected public hospital's labour unit. There were 48 possible preventable maternal deaths recorded, but the reasons or explanations for the causes and contributing factors of the deaths were not documented (Selected hospital's Maternal Death Register, 2021).

3.5.2 Data collection

Data collection is the precise and methodical collecting of information linked to the research goal or the specific aims, questions, or hypotheses of a study (Burns, Grove & Gray 2017:691; Polit & Beck 2017:493). The researcher used a Perinatal Problem Identification Programme (PPIP) clinical audit instrument (see Annexure G) to audit the patients' records for preventable intrapartum maternal deaths (Rhoda, Greenfield, Muller, Prinsloo, Pattinson, Kauchali & Kerber 2014:160). The PPIP was designed and developed in South Africa in the 1990s as a facility-based audit tool to improve the quality of care for pregnant women and new-borns. Permission was granted by Department of health to use the PPIP audit tool (See Annexure H) Identification of the numbers, causes of death and avoidable deaths associated with stillbirths and neonatal deaths enable the identification of critical gaps and decisions to be made on where interventions are needed, such as facility improvement, equipment availability, staffing and staff training. In order to achieve MDG4, the use of the PPIP is mandatory for all facilities delivering pregnant mothers and caring for newborns (Rhoda et al 2014:164). The PPIP tracks and measures progress by conducting in-depth investigations into the reasons and circumstances of maternal and newborn mortality in public health facilities (Rhoda et al 2014:164).

3.5.3 Pilot study

A pilot study or pre-test is a trial run to evaluate the use of a data-collection instrument to solicit the desired information (Polit & Beck 2017:268). The goal of the pilot study is to assist with the preparation of the main study by conducting the pre-test to assess the validity and reliability of the instrument (Ahmad & Ahmad 2018:46-47). A well-designed and executed pilot study may assist a researcher in assessing the strength of connections between significant variables (Polit & Beck 2017:268). The pretesting assisted the researcher to estimate the time required to

examine the patient files and complete the PPIP. Only the maternal death section of the PPIP was used to collect data in Phase 1 for the purposes of this study. The researcher determined that retrieving the patients' files and auditing them using the PPIP clinical audit tool was necessary. The researcher obtained permission to access the maternal death register, to identify the preventable intrapartum maternal deaths and access the patient files that met the study inclusion criteria. The researcher retrospectively assessed five (5) patient files, and entered the required information in the PPIP. These maternal deaths were not included in the main investigation. The pilot study enabled the researcher to familiarize herself with the audit and determine how long it would take to audit the files. Each file's volume or size determined how long it took to audit it.

3.5.4 Data analysis

Data analysis is the systematic organization and synthesis of research data with the purpose of establishing patterns of relationships (Polit & Beck 2021:512). The data was analysed using descriptive statistics to describe and synthesize the quantitative data (Polit & Beck 2020:512). A statistician assisted with the analysis of Phase 1 study (see Annexure I). The characteristics of the responses were reported by the Perinatal Problem Identification Programme (PPIP). A statistician analysed the data using the Statistical Package for the Social Sciences (SPSS) program, version 26. The statistician used frequencies and descriptive statistics, such as medians, means and standard deviations to describe and synthesise data (Polit & Beck 2021:512). The researcher interpreted the results and formulated meaning from the data. The explanatory sequential research design helped the researcher to explain the outcomes of Phase 1 in detail utilizing the results of Phase 2 during data analysis and discussion of results.

3.5.5 Validity and reliability

Rigour minimizes bias and ensures control over variables under study (Polit & Beck 2021:558). Rigour is a way by which reliability or trustworthiness is assured in any research finding. Rigour is the degree to which conclusions made in a study are accurate and true (Polit & Beck 2021:310). Researchers maintain reliability or trustworthiness by paying close attention to details, being

meticulous, and maintaining strict discipline and accuracy at all times (Burns, Grove & Gray 2021:708).

Reliability and validity criteria were used to provide quality control.

- **Reliability and validity of the research instrument**

Reliability refers to the degree of consistency or dependability with which the instrument measures the attribute it is designed to measure. If the instrument is reliable, the results will be the same each time the test is repeated (Polit & Beck 2021:194). Reliability of measurement specifies the degree to which it is without bias, is error free and ensures consistent measurement across time and the items in the instrument (Sileyew 2019:1). To ensure reliability, the Perinatal Problem Identification Programme (PPIP) audit tool was used in this study to audit all the 2018-2021 intrapartum maternal deaths recorded as preventable.

Content validity was used to determine whether the research instrument's items are indicative of the topic domain under study. The use of the Perinatal Problem Identification Programme (PPIP) ensured both reliability and validity because the PIPP is a computerised clinical audit tool that was designed and developed by the South African public health system as a facility-based audit tool for perinatal deaths to improve the quality of care to mothers and babies (Rhoda et al 2014:160).

Internal consistency establishes whether the items in the questionnaire measure the same trait (Polit & Beck 2021:157). The PPIP audit tool is considered a reliable audit tool since it has been and is still used in South Africa to assess and analyse causes of maternal deaths.

Validity refers to the degree to which an instrument measures what it is designed to measure. It refers to how well an empirical measure accurately reflects the true meaning of the concept in question (Polit & Beck 2021:157).

- **Validity of the research design**

This section describes the internal and external validity of the research design.

- ***Internal validity***

Internal validity refers to the extent to which the independent variables observed in the study are a true reflection of reality rather than the result of extraneous variables (Polit & Beck 2021:157). The internal validity of the study was enhanced by using purposive probability sampling, which minimized selection bias and resulted in a representative sample of the population under investigation. The researcher used purposive sampling to select all the patient files that were recorded as preventable intrapartum maternal deaths between 2018 and 2021 (Polit & Beck 2021:157). A statistician analysed the data collected in Phase 1 to verify the findings.

- ***External validity***

External validity refers to whether relationships observed in the study participants can be generalised to other populations and settings (Polit & Beck 2021:157). The use of purposive sampling to select patient files of the intrapartum maternal deaths to determine the causes allowed the results to be generalised on a small scale, which was the selected public hospital. The study results cannot be generalised to other public hospitals in Gauteng or other provinces, because they applied to one selected hospital and population.

3.6 PHASE 2: IMPLEMENTATION OF MATERNITY GUIDELINES TO REDUCE PREVENTABLE INTRAPATURM MATERNAL DEATHS

Phase 2 involved the implementation of selected maternity guidelines to reduce preventable intrapartum maternal deaths at the selected public hospital.

3.6.1 Implementation research

Phase 2 was implementation research and focused on the implementation of maternity guidelines to reduce preventable maternal deaths at the selected public hospital in Gauteng Province, South

Africa. Implementation research is a scientific investigation into the processes and factors that

influence the implementation of evidence-based programmes and policies in real-world situations (Mazzucca, Arredondo, Hoelscher et al 2021:136; Peters, Adam, Alonge, Agyepong & Tran 2013:1). Implementation research generates knowledge through close collaboration with groups or communities and can motivate people and encourage community solidarity (Polit & Beck 2017:496). In health care settings, implementation of health care programmes may include policies, clinical guidelines or protocols, or individual practices collectively called interventions.

Increasing access to quality maternal health services, such as prenatal and postnatal care, and competent attendance during childbirth, especially emergency obstetric care, could avert many maternal and neonatal deaths (Nghifikwa 2021:13). To reduce preventable intrapartum maternal deaths requires effective implementation of approved guidelines that provide evidence-based midwifery care practices for routine care and management of complications. Implementation research prompts researchers to describe both the implementation strategy techniques used to promote implementation of an underused evidence-based intervention and the effectiveness of the intervention being implemented (Pinnock, Barwick, Carpenter et al 2017:1). The main objective of implementation research is to improve the quality of care and health outcomes by implementing guidelines or health care programmes.

Below is the process that was followed during the implementation process.

After permission was granted by relevant ethics committee; the University of Pretoria Research Ethics Committee (See Annexure B), and the Gauteng Department of Health (See Annexure D), the researcher planned the implementation of Maternity Care Guidelines at the selected public hospital. The researcher visited maternity department (Labour ward) to recruit participants to volunteer to be part of in the implementation workgroup.

3.6.2 Invitation to the implementation workshop

Once ethical clearance was obtained from the relevant committees, the researcher made appointments with the Day and Night shift midwives for information sessions about the study.

- The researcher sent out an invitation for midwives who wished to participate in the implementation workgroup to contact her personally. The researcher shared the study information document, which included her contact information.
- The invitation and information document were put on the notice board in the nurse's tea room in the labour ward at the selected public hospital.
- The researcher held informational sessions with the labour ward operational managers, midwives to discuss the purpose, goal, and purpose of the workshop.
- On 31 October 2022, the researcher sent an invitation letter to inform the Hospital Chief Executive Officer, Obstetrics and Gynaecology Department, Clinical Managers, Assistant Managers, Heads of Department, Operational Managers, Staff Development and Quality Assurance, Midwives and Midwife Specialists about the workshop (see Annexure J). To introduce the study, the researcher presented the objectives and significance of the study in an information session with the heads of departments, assistant managers, and operational managers in the boardroom/conference centre at the selected public hospital.
- The researcher collaborated with her supervisors as the facilitators of the workshop.
- The researcher visited the labour ward at the selected public hospital, to inform and remind the midwives and staff about the planning workshop and recruit those who wished to participate.

Once the implementation workgroup was finalised, the researcher scheduled a meeting for the workshop. Table 3.1 presents the workshop participants' demographic profile.

Table 3.1 Workshop participants' demographic profile

Partici-pant	ADV M OR MD	Qualifications	Years' experience
1	MD	B.Cur (Bachelor of Nursing Science and Arts; general, community, psychiatric and midwifery and Diploma in Primary Health Care Honours degree in Nursing Education and Administration	15
2	MD	Dip in General Nursing Science and Midwifery	3
3	MD	B.Cur (Bachelor of Nursing Science and Arts; general, community, psychiatric and midwifery Honours degree in Nursing Education and Administration	5
4	MD	Diploma in General Nursing Science and Midwifery	15
5	MD	Diploma in General, Community, Psychiatric and Midwifery Honours degree in Nursing Education and Administration	12
6	ADM	Diploma in General, community, psychiatric and Midwifery and Advanced Midwifery	12
7	MDS	Diploma in general, community, psychiatric and midwifery and Advanced Midwifery	15
8	MD	Diploma in general, community, psychiatric and midwifery	3
9	ADM	Diploma in general, community, psychiatric and midwifery and Advanced Midwifery	5
10	MD	Diploma in general, community, psychiatric and midwifery	2
11	MD	Diploma in general, community, psychiatric and midwifery	4
12	MD	Diploma in general, community, psychiatric and midwifery	5
13	ADM	Diploma in general, community, psychiatric and midwifery and Advanced Midwifery	11
14	MD	Diploma in general, community, psychiatric and midwifery	7
15	MD	Diploma in general, community, psychiatric and midwifery	11
Summary of participants MDS = 4 MD = 11 Total =15			

Key:

P=Participant

ADV M=Midwife Specialist/Advanced Midwife

MD= Midwife

Qual= Qualification

Y Exp=Years of experience

3.6.3 Workshop

The workshop was held on 25 November 2022 from 08h00 to 11h30 at the conference centre of the selected public hospital.

- The researcher welcomed the supervisors and participants.
- As a token of appreciation for attending, the participants received a reflective journal and pen to write their experiences during the workshop
- The researcher's supervisor facilitated the workshop.
- The researcher took field notes during the workshop
- Introduction: The researcher's supervisors, the researcher and the participants introduced themselves.
- The agenda was circulated to the participants (see Annexure K)
- All participants were given an opportunity to read the research information documents and ask questions before giving informed consent to participate in the study. The participants signed the informed consent forms and returned them to the researcher (see Annexure E).
- Ground rules were set for the smooth running of the workshop
- The participants were divided into two groups: Group A and Group B
- The roles and responsibilities of group members were clarified.
- Participants were encouraged to participate and told that their participation would help to select the best maternal guidelines to possibly reduce preventable intrapartum maternal deaths
- Feedback on Phase 1 findings. The researcher presented the findings from phase 1 in a PowerPoint presentation.

3.6.4 Reaching consensus on specific maternal guidelines to be implemented

- After the researcher presented the findings from Phase 1, Group A and Group B discussed the findings and agreed on the maternal guidelines that should be implemented to reduce preventable intrapartum maternal deaths.
- Each group had a group leader to take notes for reference.

- Consensus was reached on which specific guidelines should be implemented to address the identified factors contributing to preventable maternal deaths depicted in Phase 1
- After discussion, group members reached consensus on which guidelines should be implemented to reduce preventable maternal deaths.

  The following maternal guidelines were agreed upon:
  - The use of the partogram during labour
  - Management of hypertensive disorders in pregnancy, labour and puerperium
  - Management of obstetric haemorrhage, including antepartumand postpartum haemorrhage

3.6.5 Action plan for the implementation of the identified maternal guidelines

- An action plan was negotiated with the workgroup members for implementation.
- Dates and times for meetings, sessions, and feedback were planned and scheduled over a six-month period.
- Clarification of roles and responsibilities of group members, shift leaders.
- Channels of communication were discussed with every group member.
- An implementation strategy/plan was discussed and confirmed.
- Meetings were scheduled for the beginning and end of each shift.
- Different activities, such as in-service training sessions, group discussions, reflective conversations, posters, group discussions with each shift and during hospital perinatal meetings, were a continuous process throughout Phase 2 of the study. This was done to make sure that the group members upheld the action plan and implemented the maternity guidelines throughout shifts.

3.6.6 Evaluation of the workshop by facilitators, researchers and participants

An audio tape recorder was used to evaluate how each participant felt about the workshop. Each participant had the opportunity to say what the liked least and what they liked most about the workshop they participated in. Table 3.2 present a summary of the liked least and liked most of participants See Annexure R for a verbatim transcription of the audio recoded interviews after the

workshop of the like most and like least of participants. Tea was served at the end of the workshop and the workshop was adjourned.

Table 3.2 Participants like most and like least from the consensus workshop

Participant	Like most	Like least
1	• Informative, teaching and learning session • Selection of Maternity Care Guidelines	None
2	• Selection of Maternity Care Guidelines	None
3	• Informative, teaching and learning session	None
4	• Informative, teaching and learning session • Knowing the causes of preventable maternal deaths t the selected public hospital	Not invited to the hospital M&M meetings
5	• Selection of Maternity Care Guidelines	None
6	• Teamwork and Information sharing • Group discussion to select maternity Care Guidelines	Not invited to the hospital M&M meetings
7	• Knowing the causes of preventable maternal deaths t the selected public hospital	None
8	• Informative, teaching and learning session • Selection of Maternity Care Guidelines	None
9	• Knowing the causes of preventable maternal deaths t the selected public hospital	Not invited to the hospital M&M meetings
11	• Teaching and learning session • Knowing the causes of preventable maternal deaths t the selected public hospital	None
12	• Teaching and learning session • Selection of Maternity Care Guidelines	None
13	• Informative, teaching and learning session	None
14	• Knowing the causes of preventable maternal deaths at a selected public hospital • Selection of Maternity Care Guidelines	Not invited to the hospital M&M meetings

Key

P=Participant

M&M=Morbidity and Mortality

The researcher planned and implemented the guidelines in collaboration with the midwives working in the specific labour ward. The researcher received buy-in from the workgroup members,

which included the midwives, shift leaders and maternity unit managers to ensure continuity and

sustainability of the implementation of the intrapartum guidelines to reduce preventable maternal deaths.

3.6.7 Implemented maternity guidelines at the selected public hospital in Gauteng

The National Department of Health published the 4th edition of the *Guidelines for Maternity Care in South Africa* in 2016. This is a manual or guidebook for clinics, community health centres, hospitals, clinicians, including midwives, to apply necessary skills to provide quality maternal care. Among other things, the guidelines offer a practical method for primary healthcare providers in South Africa to manage pregnancy, labour, and delivery, with the ultimate goal of lowering maternal mortality deaths during pregnancy or within 42 days of birth (NDOH 2016:10). The maternity care guidelines discuss both normal and abnormal labour. This includes admitting a labouring patient, assessing, diagnosing, planning, maternal and foetal wellbeing monitoring, evaluating obstetric or midwifery management and treatment. The maternity guidelines further outline the preventive measures during labour to prevent maternal and foetal complications.

The NECCEMD recommendations include improving health care worker training to provide Essential Steps in Managing Obstetric Emergencies (ESMOE) (NDOH 2020:11). To improve maternal and neonatal outcomes requires that maternity units, including the labour wards, be equipped with knowledgeable, competent, confident and skilled health care providers so that they can operate efficiently and effectively to provide emergency obstetric care. To achieve this, the national department of health is continuously identifying the need to strengthen human resources for maternal and child health by providing training on Essential Steps in Management of Obstetric Emergencies (ESMOE) and emergency simulation training to doctors and midwives (NDOH 2020:11).

The Essential Steps in Managing Obstetric Emergencies (ESMOE), a skills-and-drills programme, was created in 2008 to train all maternity care providers. Sudden maternal collapse or obstructed labour, cord prolapse, obstetric haemorrhage, shoulder dystocia, and hypertensive disorders such as pre-eclampsia or eclampsia during labour are all examples of obstetric emergencies during the intrapartum period. Despite all the NECCEMD proposed initiatives, maternal mortality in South Africa remains high, although there has been an improvement since the inception of the ESMOE (Pattinson, Bergh, Ameh et al 2019:241).

Implementation research prompts researchers to describe both the implementation strategy techniques used to promote implementation of evidence-based interventions and the effectiveness of the intervention implemented (Pinnock et al 2017:1). The following maternal guidelines were implemented in the labour ward at the selected public hospital in Gauteng, to Gauteng province to reduce preventable intrapartum maternal deaths. The implementation phase took place over a five-month period.

3.6.8 Summary of the three selected Maternity Care Guidelines implemented in the labour ward at the selected public hospital

3.6.8.1 Guideline 1: Use of the partogram during labour

The modern partogram was introduced in 1971 by Philpott and Castle and is a graphical recording of the progress of labour that includes maternal and foetal observations and charts the progress of labour, and is an improvement on Friedman's original partogram, as it includes alert and action lines to identify abnormal labour (Brits, Joubert, Mudzwari, et al 2020:302). The incidence of maternal and neonatal deaths can be mitigated by properly monitoring the progress of labour. The partogram is an intrapartum monitoring technique that allows for early detection and intervention in abnormal labour. Labour is diagnosed if there are persistent painful uterine contractions accompanied by at least one of the following, namely changes in cervical effacement and dilatation, ruptured membranes and show (NDOH 2016:40). Labour is divided into two phases, namely latent and active. The latent phase is when the cervix is less than 4cm and more than 1cm long. The active phase of labour is when the cervix is more than 4cm and less than 1cm long. In this study, the results revealed that uterine atony due to prolonged labour or poor progress as a result of partogram not being used or not used correctly were among the causes of preventable maternal deaths during intrapartum. Furthermore, uterine atony also can also lead to PPH and hypovolemic shock.

If midwives could adhere to the use of the partogram during labour, the majority of maternal, foetal, and neonatal morbidity and mortality could be reduced. About 42% of maternal deaths and 24.3% of neonatal mortality occur during childbirth (Brits et al 2020:302). The use of partograms,

early identification of problems and timely interventions during childbirth have the potential to minimize maternal and neonatal mortality (Nghifikwa 2021:3).

All observations during labour should be recorded on a partogram, according to the 2016 Guidelines for Maternity Care in South Africa (NDOH 2016:40). Complications of prolonged and obstructed labour, such as post-partum haemorrhage, sepsis, newborn asphyxia, and death, can be reduced if abnormal labour is diagnosed and managed early and this can only be achieved through the use of partogram (Brits et al 2020:302). The national maternity guidelines in South Africa recommend and describe the use of the partogram, including when to use it, how to use it, and what to do if the midwife notices any irregularities in maternal or foetal wellness.

3.6.8.2 Guideline 2: Management of hypertensive disorders during labour

Pregnancy-induced hypertension, pre-eclampsia, eclampsia, and HELLP syndrome are all examples of hypertensive diseases. The results from phase 1 of this study showed that hypertensive disorders continue to rank among the top four causes of maternal mortality throughout South Africa's provinces. In 2020, the main causes of preventable maternal deaths in South Africa during the intrapartum period were hypertensive disorders in pregnancy (70,6%) (NDOH 2020:34). Phase 1 found that the final causes were syndrome and multi organ failure.

3.6.8.3 Guideline 3: Management of obstetric haemorrhage from retained placenta

Obstetric haemorrhaging that was managed included antepartum haemorrhage and postpartum haemorrhage. Phase 1 revealed that the primary causes of preventable maternal deaths were retained placenta and uterine rupture from previous caesarean sections, and hypovolemic shock. The National Department of Health (2020:34) revealed that obstetric haemorrhage accounted for 89.5% of preventable maternal fatalities. Severe obstetric haemorrhage should be treated as a major alert requiring a multidisciplinary approach to resuscitation and a stepwise approach to bleeding control.

3.7 PHASE 3: REPORT ON THE OUTCOMES OF THE IMPLEMENTED MATERNITY CARE GUIDELINES TO REDUCE PREVENTABLE INTRAPATURM MATERNAL DEATHS

Following the five-month implementation phase, the outcome of the implementation (Phase 2) was evaluated. Phase 3 was qualitative. This section discusses the target population, sample and sampling, data collection and analysis, and the measures to ensure trustworthiness.

3.7.1 Phase 3: Qualitative research design

Phase 3 employed a qualitative approach to report on the outcomes of the implemented maternity guidelines to reduce preventable intrapartum maternal deaths at the selected public hospital in Gauteng province, South Africa. Interpretive research methods are used in qualitative research to study people, groups, and phenomena in contexts that reflect how people make sense of and interpret their own experiences, themselves, others, and the social world (Ravitch & Carl 2019:1). Qualitative researchers use interviews with individuals or groups to collect data about phenomena under study. The style of interview used depends on the subjects of the study and the available resources (Carter, Bryant-Lukosius, DiCenso, Blythe & Neville 2014:545).

Researchers who employ inductive approaches, such as insights originating from data, and who recognize the researcher's responsibility in guiding all aspects of a study are known as qualitative researchers. They hold that research is interpretive and structured as naturalistic enquiry (Ravitch & Carl 2019:4).

This study was explorative, descriptive and contextual:

- **Exploratory**

Exploratory research is conducted to gain new insight, to discover new ideas and knowledge of the phenomenon being studied (Burns, Grove & Gray 2017:678). In Phase 3, an exploratory approach allowed the researcher to explore the participants' experience as they explained their views on the implemented maternity guidelines to reduce preventable maternal deaths in their own words.

- **Descriptive**

Descriptive research is conducted to understand, describe, and ultimately analyse the complex processes, meanings, and understandings that individuals have and make within their experiences, contexts, and milieus (Ravitch & Carl 2019:10). Qualitative research is both descriptive and analytical and describes the variables in order to answer the research questions (Ravitch & Carl 2019:10).

- **Contextual**

A contextual design allows a researcher to explain and comprehend occurrences within the actual, natural context in which they occur. The context of this study was a selected public hospital in Gauteng Province, South Africa. A contextual approach allowed the researcher to examine and understand the phenomenon under study within the participants' natural setting.

3.7.2 Population

A population is the entire aggregate of people or objects in which a researcher is interested (Brink, van der Walt & van Rensburg 2017:703; Polit & Beck 2021:141). The population of interest for a study is made up of the individuals, groups, organizations, or other entities that the researcher wants to understand and to whom the study results can be generalized or transferred (Polit & Beck, 2021). In Phase 3, the population consisted of experienced midwives, midwife specialists, operational managers and assistant managers working in the labour ward of the selected public hospital in Gauteng.

3.7.3 Sampling and sample

In Phase 3, the researcher used non-probability, purposive sampling to select the participants based on her knowledge of the population (Polit & Beck 2021:143). According to Polit and Beck (2020:143), researchers may choose people who are deemed to be knowledgeable about the subject under investigation. The researcher purposively selected the midwives who met the inclusion criteria and voluntarily consented to participate in the study. This phase evaluated the implemented maternity guidelines at the selected public hospital to reduce preventable

intrapartum maternal deaths. The sample size was determined by data saturation. Data saturation is reached when the researcher has sufficient data to answer the research question and no new information or themes emerge (Polit & Beck 2021:143).

To be included in the study, the participants had to:

- Be a midwife or midwife specialist registered with the South African Nursing Council.
- Work in the labour unit at the selected public hospital during the five-month implementation period in the specific labour ward.
- Have at least 2 or more years of experience working in the labour unit.
- Give voluntary written informed consent to participate in the study.

Midwives who were not working in the labour unit, or had less than two years of experience working in the labour unit at the selected hospital were not included in the study

3.7.4 Data collection

Data collection is the process of collecting information (data) related to the research question in a systematic way to address a research problem (Polit & Beck 2021:145). Qualitative researchers collect their data in a real-world naturalistic setting (Polit & Beck 2021:145).

The data collection procedures for Phase 3 are discussed next:

(a) Re-audit of the intrapartum maternal deaths patient files

In order to evaluate the efficiency and effectiveness of the implemented Maternity Care Guidelines, the researcher re-audited the patient files of the intrapartum maternal deaths at the selected public hospital in Gauteng. The objective was to ascertain the state or maternal mortality ratio of preventable intrapartum maternal deaths and whether the maternity guidelines were successfully implemented. Four (4) maternal deaths that occurred in the labour ward of the selected public hospital were retrospective and were audited using the same audit tool (PIPP audit tool). Two (2) intrapartum maternal deaths were preventable. Table 7.3 summarises the two

(2) preventable maternal deaths that occurred during the intrapartum period in the labour ward of the selected public hospital. Chapter 7, table 7.3 presents the analysis of the four intrapartum maternal deaths.

(b) Focus group interview: Workgroup members

The researcher conducted a focus group interview to evaluate the outcomes of the implemented intrapartum guidelines to reduce preventable intrapartum maternal deaths (see Annexure F). Sileyew (2019:5-6) defines a focus group interview as an in-depth interview with people who are believed to be exceptionally knowledgeable about the topic of interest. Focus group interviews are often used in health research to get the opinions and perspectives of professional staff and can be used in implementation research to get input from patients and heath care professionals (Polit & Beck 2021:181). According to Rutakumwa et al (2020:578), in-depth interviews, including focus group interviews, are generally regarded as an exchange or as a “gift”, with the data being an exchange or a product of the interaction between the interviewer and the interviewee and a gift in that the interviewer leaves with the data after the interview.

Agenda focus group interviews are helpful, Creswell and Báez (2020:115), that participants can offer historical data, which is helpful when they cannot be directly observed. Furthermore, focus group interviews provide the researcher to control over the path of inquiry over a period of time and promote open discussion. This research study aims at improving maternal health outcomes through the implementation of intrapartum guidelines to reduce preventable intrapartum maternal deaths at a selected public hospital in Gauteng, therefore service delivery was not affected during data collection.

In focus group interviews researchers select a small group of people to provide feedback on a specific topic, guided by a moderator using an interview guide (Barrett & Twycross, 2018:63). The researcher scheduled the interviews at the selected public hospital, including the day, time, and location. To protect data privacy and confidentiality, prior to the start of the focus group interviews, the researcher allowed the participants to choose a pseudonym for themselves, which was written on their name tags. The researcher guaranteed that service delivery was not disrupted. Participants that met the inclusion criteria and were unable to participate in the focus group interview were interviewed individually by the researcher.

The researcher provided the participants with a brief information guide about the study (see Annexure F). During data collection, the researcher followed Covid-19 standards and protocols by ensuring that all the participants wore masks and maintained social distancing. The outcomes of the implemented guidelines were evaluated (Proctor, Silmere, Raghavan, Hovmand et al 2011:66). According to Proctor et al (2011:66), the most significant criteria for evaluating both therapeutic and implementation strategies are improvements in patient well-being. Phase 3 wished to evaluate the effectiveness of the implemented intrapartum guidelines to reduce preventable intrapartum maternal deaths.

Accordingly, the researcher asked the following questions during the focus group interview to evaluate the outcomes of the maternity guidelines implemented to reduce preventable intrapartum maternal deaths (Proctor et al 2011:69-71):

- **Feasibility:** How will you ensure that the intrapartum guidelines are feasible at this public hospital in Gauteng?
- **Acceptability:** How do you as midwives foster support among local stakeholders for the best implementation of intrapartum care guidelines at this public hospital in Gauteng?
- **Appropriateness:** Are these intrapartum care guidelines appropriate, efficient and effective in reducing preventable intrapartum maternal deaths?
- **Adoption:** How would you encourage midwives to use the intrapartum care guidelines at this public hospital?
- **Penetration:** How can you attract other midwives to adopt the intrapartum care guidelines in the prevention of preventable intrapartum maternal deaths?
- **Sustainability:** How can you ensure that these intrapartum care guidelines remain effectively implemented throughout the intrapartum period?

The researcher asked the central questions and posed additional probes depending on each participant's response. Probes are prompting questions that encourage participants to talk freely about the topic and elicit more detailed information on the topic (Polit & Beck 2021:180). The aim of probing was to acquire in-depth views from the participants on the outcomes of the implemented intrapartum care guidelines in Phase 2. The researcher participated fully, encouraged the participants to talk and be interactive during the focus group interviews, took field notes, and audio-taped the discussions (see Annexure F).

The focus group interviews took approximately 30 to 45 minutes, depending on the participants' engagement. Field notes are notes written by a researcher to capture unstructured observations and conversations collected in the field and how those observations were interpreted (Polit & Beck 2021:183). In qualitative studies, researchers take field notes to observe participants expressions, body language and other observations during interviews. Field notes assist researchers to collect, synthesize, and understand data. To encourage the participants during the focus group interviews, the researcher used active listening and silence, paraphrasing, reflecting, and summarising their contributions. The focus group interviews were conducted by the researcher with the participants' consent to tape-record the focus group discussions. During the focus group interviews, probing was used to obtain information and clarification from the participants about the evaluation of the results of the maternity guidelines implemented to reduce preventable intrapartum maternal deaths at the selected public hospital. Probes are prompting questions that foster and encourage the participants to talk freely and to elicit more detailed information on the topic (Polit & Beck 2021:510). Data was collected from 4 groups until data saturation was reached. Data saturation occurred with the fourth group (Green), when no new information emerged.

- **Active listening**

  To show understanding and respect for what the participants were saying, the researcher listened intently and showed interest by nodding her head (De Vos, Strydom, Fouche & Delport 2011:345). Active listening encouraged the participants to provide in-depth information on the topic under investigation.

- **Silence**

  With silent listening, the researcher nodded gently to encourage the participants to pause for a moment to elicit additional comments. Because the participants' attention was concentrated while they were talking, using silence encouraged them to provide more in-depth information.

- **Paraphrasing**

  Paraphrasing is a communication technique in which the researcher improves the significance of the participants' words by repeating them in a different form with the same meaning (De Vos et al 2011:345). During the focus group interviews, the researcher used paraphrasing to

explain the thoughts clearly for better understanding by repeating participants' significant

words, such as "If I understand you correctly, you indicated that successful implementation of intrapartum guidelines can reduce ……. Am I correct?''

- **Summarizing**

The summarizing communication technique was utilized by the researcher to assist the participants in combining multiple essential ideas and contributing meaningfully to the focus group interview.

- **Reflection**

Reflection and dialogue were used by the researcher to stimulate interactive participation and help participants clarify their ideas. The four focus groups with interactive agendas, each with a different number of participants, were held over the course of four weeks and are summarized below. See Table 3.3 for the summary of the focus group interviews.

Table 3.3 Description of labels assigned to participants in the focus group interviews' data set

FOCUS GROUP INTERVIEWS				**FIELD NOTES**
14/07/2023	**17/07/2023**	**19/07/2023**	**21/07/2023**	
Yellow Team	**Blue Team**	**Orange Team**	**Green Team**	**The researcher**
Group 1 4 Participants Shift 1 (day) Duration: 40 minutes	Group 2 6 Participants Shift 2 (day) Duration: 30 minutes	Group 3 7 Participants Shift 3 (night) Duration: 35 minutes	Group 4 6 Participants Shift 2 (night) Duration: minutes.	The researcher took written field notes during all the focus group interviews.
Number of midwives per shift				
07	09	10	09	

(c) Individual narrative interviews: Midwives

Narrative interviewing is a method of qualitative data collection to generate a story in a narrative form through unstructured interview (Polit & Beck 2021:366; Ravitch & Carl 2019:24). Narrative interviews focus on participants who narrate what was said (themes), how it was stated (unfolding story). Narrative interviews provided an opportunity for the participants to narrate their lived experiences of the evaluation outcomes of the implementation of the maternity care guidelines to reduce preventable intrapartum maternal deaths at a selected public hospital. The researcher asked the participants (midwives) to write down what the worth or value of the implementation of the intrapartum guidelines was to them personally and professionally. The evaluation of the outcomes of the implemented maternity care guidelines was done after the five months implementation period. Participants were provided with the study information document and a consent form to participate in individual narrative interviews (See Annexure M). The data collection tool had instructions on how to complete and submit back to the researcher. The outcomes of the narrative interviews are presented in Chapter 6 of this study. The question below was asked to each participant to narrate their personal and professional experiences during the implementation of maternity care guidelines.

- What did the implementation of maternity guidelines to reduce preventable intrapartum maternal deaths journey mean to you personally and professionally?

(d) Reflective dairies: Researcher/Workgroup members

The researcher and the workgroup members in the labour ward had reflective dairies during the implementation period to document all important or observed data during the implementation process. Reflective diaries are standard data sources that make it possible to generate new data for a study by asking participants to maintain a diary over a specified period (Polit & Beck 2021:181). The reflective dairies were kept throughout the implementation period (five months).

3.7.5 Data analysis

Data analysis includes categorising, ordering, manipulating and summarising the data collected and describing the data in meaningful terms called broad categories and themes (Creswell 2014:198). Polit and Beck (2021:271) define a theme as an abstract entity that brings meaning and identity to a current experience and its manifestation. A theme is a reoccurring regularity in the data that captures key patterns. It generally crosses numerous categories.

In qualitative research, content analysis is done by keeping a record of the interactions between the researcher and the participants. Transcripts of discussions and interviews, protocols for observation, videotapes, and written documentation are some of the methods that can be used.

Qualitative content data analysis was used to analyse data in Phase 3 of the study. Qualitative content analysis is the analysis of the content of narrative data to identify prominent themes and patterns among the themes (Polit & Beck 2021:261). Qualitative content analysis involves breaking down data into smaller units, coding and naming the units according to the content they represent, and grouping coded material based on shared concepts with an attempt to identify the core consistencies and meaning (Patton 2002:453). Qualitative content analysis of transcripts, narrative interviews as well as reflective dairies was used during data analysis. The following steps were used during qualitative content data analysis. To maintain privacy and confidentiality, alphabetical letters were used instead of names throughout data analysis, such as “Participant A”.

(a) Preparation of and familiarisation with data

A total of four data sets were prepared. Of these four, were four transcripts contained the agenda focus group interviews, individual written narrative interviews, reflective journals/diaries and field notes written by the researcher. The researcher listened to the audio-recorded interviews repetitively to immerse herself in the data and then transcribed the interviews verbatim. Using audio recordings to create transcripts of in-depth interviews and group discussions has become standard practice in qualitative studies to eliminate bias and guarantee the validity of qualitative research (Rutakumwa et al, 2020:766).

To gain a sense of each interview, the researcher transcribed the focus group interviews verbatim to generate high-quality, readable texts from the audio recordings. The researcher read the narrative interviews as well as the reflective dairies of the workgroup members as well as her personal reflective dairy. Pseudonyms, such as Participant 1, were used to protect participant identification during data analysis. This further ensured anonymity and confidentiality of the collected data.

The researcher listened to the audio-recorded interviews repetitively to immerse herself in the data and then transcribed the interviews verbatim. To gain a sense of each interview, the researcher transcribed verbatim the focus group interviews transcripts, narrative interviews as well as the reflective dairies of the workgroup members as well as the researcher's personal reflective dairy.

(b) Categorising and coding

Coding refers to analysing qualitative data by identifying and grouping meaningful terms or words and developing codes for them (Creswell & Creswell Báez 2020:159). Researchers create a variety of supporting data for themes through coding. Using coloured pens and highlighters, a researcher can manually code data by making notes in the margin of the text. The researcher collaborated with an independent coder who was deliberately chosen to assist with data analysis in making conclusions and validating the data. To guarantee conceptual coherence, the researcher and the independent coder noted significant patterns, themes, and categories. The researcher adhered to quality control standards for the collection and analysis of qualitative data with the principles of trustworthiness.

To argue, confirm, and agree on significant categories and issues, as well as derive conclusions from the data, the researcher and the independent coder discussed, verified and agreed on broad categories and themes, and drew conclusions from the data.

The researcher developed a list of significant statements, such as how individuals experienced the topic, listed the significant statements and treated each statement equally, and developed a list of non-repetitive, non-overlapping statements. Significant statements were identified and grouped into larger units of information called themes. The researcher and the coder agreed on which data to categorise, subcategorise and display to make the study findings meaningful. The

researcher analysed and interpreted each theme, related categories and themes.

(c) Data display and presentation

Data display incorporates matrices, which are constructed by drawing columns and raw data to display the data with the columns labelled in accordance with the query posed. The researcher reviewed and sorted through the data from the transcribed data and field notes, to find common phrases, relationships, trends, and discrepancies. The researcher then assigned themes to the appropriate matrix's columns.

The researcher analysed and interpreted each theme, related categories and subcategories.

(d) Conclusions and verification during data analysis

To analyse the data, the researcher selected an independent coder with extensive qualitative research experience to listen to and analyse the data independently. The researcher collaborated with the independent coder in making conclusions and validating the data. To guarantee conceptual coherence, the researcher and the independent coder took notes of significant patterns, themes, and categories. The researcher adhered to quality control standards for the collection and analysis of the data through the principles of trustworthiness.

3.8 MEASURES TO ENSURE TRUSTWORTHINESS IN THE STUDY

The following criteria, adapted from Lincoln and Guba's (1985) framework (cited in Polit & Beck 2021:559-560) were used to ensure trustworthiness in Phase 4 of the study: credibility, confirmability, transferability, dependability and authenticity (see Phase 2 for full descriptions).

3.8.1 Credibility

Credibility refers to the confidence in the truth value of the data collected from the participants and the interpretation of the data (Polit & Beck 2021:276). According to Lincoln and Guba (1985:17), credibility entails two aspects: doing the study in such a way that the findings are more credible, and taking steps to demonstrate credibility to external readers. Qualitative researchers must strive to establish confidence in the truth of the findings for the particular participants and

context in the research (Polit & Beck 2021:276). In this study, credibility was established by data and method triangulation, prolonged engagement, persistent observation and peer debriefing.

3.8.1.1 Data and method triangulation

Data triangulation refers to the use of numerous data sources in order to validate conclusions (Polit & Beck 2021:280). In this study, the researcher achieved data triangulation by an extensive literature review throughout the investigation to clarify the midwives' perspectives and using a mixed methods research design to answer the research questions.

3.8.1.2 Prolonged engagement

Prolonged engagement refers to spending enough time gathering data to have a thorough understanding of the participants' culture, language, and perspectives, to test for misinformation and to ensure saturation of major categories (Polit & Beck 2021:278). During data collection the researcher ensured credibility, gained the participants' trust and established rapport (Polit & Beck 2021:278). Longer interaction is crucial for establishing trust with the participants and increases the likelihood of obtaining relevant and detailed information. The researcher's prolonged engagement with the participants during the focus group interview ensured long-term engagement by establishing trust, demonstrating interest, and ensuring confidentiality. The researcher was a moderator during the focus group interviews.

3.8.1.3 Persistent observation

High-quality data collection in qualitative studies also involves persistent observation, which concerns the salience of the data being gathered (Polit & Beck 2021:279). Persistent observation refers to the researchers' focus on the characteristics or aspects of a situation that are relevant to the phenomenon being studied. According to Lincoln and Guba (1985:305), if prolonged engagement provides scope, then persistent observation provides depth of the data collected from the participants.

3.8.1.4 Peer debriefing

Peer debriefing involves external validation sessions to review aspects of the enquiry, such as discussing the research methodology, data analysis and interpretation throughout the research process with a peer who is not directly involved in the research project (Polit & Beck 2021:282). In this study, peer debriefing was achieved by consulting with two experienced research supervisors who are experts in qualitative and quantitative research methods and who meaningfully questioned the researcher's interpretations, encouraged critical thinking, and provided alternative and additional perspectives and explanations throughout the project. The research proposal was presented to the Nursing Department for approval before submission to the Faculty of Health Sciences and University of Pretoria's Research Ethics Committee who gave approval.

3.8.1.5 Member checking

Member checking is a method of verifying the data, interpretation, and categorising to provide an opportunity to correct errors or misinterpretation (Lincoln & Guba 1985:314). In member check, researchers provide participants with feedback about emerging interpretations and elicit participants' reactions (Polit & Beck 2021:280). Participants should be able to evaluate and validate whether the researcher's interpretations are accurate representations of their experiences. Member checking was achieved in Phase 3 during the focus group interview by the researcher probing during data collection, to confirm that the focus group interviewers had correctly interpreted participants' meanings and for clarification of concepts.

3.8.2 Confirmability

Confirmability entails using and providing an audit trail to determine whether or not the findings are based on the data (Lincoln & Guba 1998:19). This is accomplished when the study findings reflect the participants' own opinions rather than the researcher's (Polit & Beck 2021:277). Confirmability guarantees that the findings, conclusions and recommendations are supported by the data and that there is internal agreement between the study investigator interpretation and actual evidence. It implies that the researcher should be objective and the data should reflect the information provided by the participants not the researcher's biases. In Phase 3, confirmability

was ensured through the use of audio-recordings and field notes to support the data from participants. The transcribed data and field notes were sent to an independent coder who is an expert in qualitative research to ensure that the findings were from the participants and that data saturation was achieved.

3.8.3 Transferability

Transferability refers to the possibility for extrapolation or the extent to which findings can be transferred or applied to different situations or groups (Polit & Beck 2021:277). Researchers should provide extensive, rich, and thick summaries of their investigations so that readers and other researchers may assess their application to various situations (Polit & Beck 2021:277). In this study, transferability was achieved by providing a dense description of the research methodology, study setting, inclusion criteria, sample characteristics and sampling methods, and data collection and analysis methods. In this study, the Phase 1 results were summarised and presented to the participants before the commencement of Phase 2. The participants were provided with a summary of the findings from Phase 1 on the causes of preventable intrapartum maternal deaths, so that consensus could be reached on which maternity guidelines could be implemented at the selected public hospital.

3.8.4 Dependability

The criterion of dependability is used to guarantee that the study findings are consistent and stable (Lincoln & Guba 1998:17). Dependability refers to the study data consistency over time, conditions, and events (Polit & Beck 2021:276). In this study, the researcher ensured dependability by examining the data and listening to the audiotapes to ensure that the results were grounded in the data. The raw data was coded, audited and archived to permit checking of the findings.

3.8.5 Authenticity

Authenticity represents the tone of participants' lives as they are lived (Polit & Beck 2021:277). Authenticity refers to the extent to which qualitative researchers fairly and faithfully show a range of different realities in the collection, analysis and the interpretation of data (Polit & Beck 2021:277). If a work takes readers into a virtual experience of the lives represented and allows them to develop heightened awareness of the situations depicted, it is said to be authentic. In Phase 3, the researcher used an audiotape-recorder to capture the interviews which were transcribed and sent to an independent coder.

3.9 CONCLUSION

The researched used a mixed methods research design in this study. The study was conducted in three phases guided by the research questions and using different data-collection methods. Phase 1 audited preventable intrapartum maternal fatalities at the selected public hospital. Phase 2 examined the implementation of maternity guidelines to reduce preventable intrapartum maternal deaths. Phase 3 reported the outcomes of the implemented maternity guidelines to reduce preventable intrapartum maternal deaths.

Chapter 4 presents Phase 1 results, the causes of preventable intrapartum maternal in an articles form.

CHAPTER 4

PHASE ONE

CAUSES OF PREVENTABLE INTRAPARTUM MATERNAL DEATH

RESEARCH ARTICLE

What went wrong? Enquiry into the Causes of Preventable Intrapartum Maternal Deaths at a selected public Hospital in Gauteng Province, South Africa

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ARTICLE

Introduction:

Maternal death during pregnancy, childbirth and the postpartum period is a tragedy with a catastrophic impact on families and serves as an important indicator of quality of care within a health care system. Ending preventable maternal intrapartum death remains an unfinished agenda of the healthcare system and one of the world's most critical challenges within maternal care despite significant progress over the past decade.

Methods:

A quantitative descriptive research method was followed, and purposive sampling used to retrospectively audit the files of 48 patients with preventable intrapartum maternal deaths that occurred between 2018 and 2021. The Perinatal Problem Identification Programme (PPIP) tool was utilised for the auditing of the files of women who suffered a preventable intrapartum maternal death.

Results:

In total, forty-eight intrapartum maternal deaths were potentially preventable. Obstetric haemorrhage (37.5%) and hypertensive disorders (31.2%) in pregnancy were shown to be the most common causes of preventable intrapartum maternal deaths. Other causes were obstetric haemorrhage, including hypovolemic shock from antepartum haemorrhage (APH) (10.4%) and PPH (27.1%); hypertensive disorders, including eclampsia (10.4%) and haemolysis, elevated liver enzymes, low platelets count (HELLP) syndrome (9.4%); Covid-19-related deaths (27.1%) due to acute respiratory failure and Covid-19 pneumonia, and finally septic shock (4.2%) and multiorgan failure (10.4%).

Discussion:

Most intrapartum maternal deaths can be prevented or reduced by strengthening skilled and competent midwives to deliver evidence-based care during the intrapartum period to achieve the best maternal outcomes. This includes comprehensive assessment and care, interpretation of special investigation, planning, implementation and evaluation during all stages of labour as well as adequate staffing and continuous in-service training and drills to keep the skills of midwives and other health care providers updated.

Key words:

Intrapartum care, preventable maternal death, public hospital, obstetric haemorrhage, hypertensive disorder, Covid-19

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4.1 INTRODUCTION

Maternal mortality is defined as the death of a woman while pregnant or within 42 days after delivery or after termination of the pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management [1, 2] More than one third of maternal deaths occur during the intrapartum period and the majority of these deaths are largely preventable.[3] Intrapartum refers to the period from the commencement of true labour, characterised by painful uterine contractions until the first hour after childbirth.[4] Preventable intrapartum maternal deaths are defined as avoidable deaths, caused by either substandard care rendered by healthcare providers, healthcare system and/or factors related to the behaviour of the woman.[5]

The Sustainable Developmental Goal 3 (SDG 3.1) states that by 2030, the global maternal mortality ratio should be less than 70 per 100,000 live births, with no countries surpassing 140 per 100,000 live births.[6] Improving the quality of care around the time of birth has been identified as the most impactful strategy for reducing preventable intrapartum maternal deaths, compared with antenatal or postnatal care.[2] The Maternal Death Surveillance and Response (MDRS) is a continuous surveillance linking the health information system and quality improvement processes at local to national level that is recognised by the WHO (2016).[7]

Existing international and national intrapartum care initiatives include: WHO Labour Care Guide User's Manual (WHO, 2020), Recommendations on Intrapartum Care for a Positive Childbirth Experience, and Strategies Towards Ending Preventable Maternal Mortality (WHO, 2018); the National Guidelines for Maternity Care in South Africa (NDOH, 2015), the Essential Steps in Managing Obstetric Emergencies (ESMOE) training (NDOH, 2020), and the South African Nursing Council Scope of Midwives (Nursing Act, 33 of 2005).

However, women continue to die while giving birth. The research question that emerged from the background and the problem statement was: What are the factors contributing to preventable intrapartum maternal deaths at a selected public hospital in Gauteng. The overall aim of this article is to explain the factors contributing to preventable intrapartum maternal deaths at a public hospital in Gauteng province, South Africa.

4.2 METHODS

4.2.1 Study design

An exploration of phenomena (preventable maternal deaths) that lend themselves to accurate measurement, quantification frequently involves a rigorous and regulated process and is referred to as a quantitative research design.[8] A quantitative approach was used to determine the causes of preventable intrapartum maternal deaths by auditing the patient files (Maternal deaths records) at a selected public hospital in Gauteng province, South Africa.

The researcher conducted the study after ethical clearance was received from the institutional research ethics committee. Ethical clearance was obtained from the University of Pretoria Research Ethics Committee (132/2022). Permission was granted by the Gauteng Department of Health and permission was obtained from the Chief Executive Officer at a selected public hospital in Gauteng Province. The quantitative descriptive study retrospectively audited the patient files to determine the causes of preventable intrapartum maternal deaths.

4.2.2 Study setting and unit analysis

The study was conducted at a selected public hospital in Gauteng province, South Africa. It is a tertiary public hospital that serves an estimated 2.5 million population. Tertiary hospitals render specialist and sub-specialist care to a number of regional hospitals and serve as a platform for training of health care workers and research.[9]

According to the Department of Health, [1,9,] for a health service to operate effectively, different levels of healthcare are needed. Clinics, district, secondary, tertiary and central hospitals should split the patient care workload for cost-effective health management, with clinics handling common and low-risk issues and hospitals handling more challenging clinical entities. The selected public hospital has a busy maternity department serving high risk pregnant women and receives referrals from 34 local clinics, two community health care centres, and three midwife obstetric units. On average the normal vaginal deliveries at the selected public hospital per day is 30 and 900 per month.

4.2.3 Data collection

In this study, retrospective auditing of intrapartum maternal death files was conducted at the selected public hospital to establish the causes of preventable intrapartum maternal deaths. A Perinatal Problem Identification Programme (PPIP) clinical audit instrument was utilized to audit the patients' records for preventable intrapartum maternal deaths. A total of 48 patient

files (N=48) from the maternal deaths that had occurred during the intrapartum period that were preventable were purposively sampled and analysed. In the 1990s, the South African public health system designed and developed the Perinatal Problem Identification Programme as a facility-based audit tool for perinatal fatalities in order to enhance the quality of treatment for women who are pregnant and newborns. The PPIP is a primary programme that tracks and measures progress by conducting in-depth investigations into the reasons and circumstances of mortality in public facilities.[10] To ensure reliability of the data-collection tool, the PPIP audit tool was tested in a pilot trial from 22 to 25 September 2022. From the pilot study, the PPIP audit tool was able to cover all the data elements, therefore no adaptations were made to the PPIP audit tool. The researcher selected 48 patient files of women who suffered preventable intrapartum maternal deaths between 2018 and 2021, and audited these files from 4 to 29 October 2022 to determine the factors contributing to preventable maternal deaths.

4.2.4 Data analysis

The data was analysed using descriptive statistics. Descriptive statistics employ computers to describe and synthesize quantitative data.[8] A statistician assisted in the analysis of the data collected. The characteristics of the replies were reported by the PPIP audit tool. The data collected was entered into a computer and graphed or charted with the help of the statistician. The researcher with the help of the statistician interpreted the results and formulated meaning from the data. Descriptive data analysis was done for the 48 intrapartum maternal death files that were retrospectively audited using the PPIP audit tool. All 48 (N=48) audit reports were organised and checked for internal dependability, comprehensiveness and exactness. According to Kotronoulas et al, in quantitative research, processing data requires a combination of careful data management strategies, statistical expertise, and analytical abilities to support interpretation.[11] The quality of the data affects the quality of outcomes. Information from each audit tool was captured using an Excel data-capturing sheet.

4.3 RESULTS

A detailed description of the results on the cause of preventable intrapartum maternal death was published in the original study. Data from all the sections of the audit tool were captured and analysed per item in accordance with the main sections and subsections of the PPIP audit tool, namely Section A: demographic data results, Section B: causes of preventable intrapartum maternal deaths, and Section C: avoidable factors of the preventable intrapartum

maternal deaths. Table 4.1 summarises the demographic profile of the women who suffered preventable maternal death.

Table 4.1 Demographic profile of women who suffered preventable maternal death			
Variable	**Characteristics**	**Frequency**	**Percentage**
Age	Under 20 years	3	6.25%
	20-37 years	27	56.25%
	37-40 years	18	37.5%
	Total	**48**	**100%**
Gravity		4	8.3%
		10	20.8%
		18	37.5%
		11	22.9%
		3	6.2%
	Total	**48**	**100%**
Parity	**0**	5	12.2%
	1	10	24.4%
	2	14	34.1%
	3	6	12.5%
	4	2	4.9%
	5	2	4.9%
	Total	**48**	**100%**
Gestational age		Min=27	2.08
		Max=40	97.91
	Total	**48**	**100%**
Antenatal care		22	45.8%
		26	54.2%
Total		**48**	**100%**

Demographic information in this study referred to the case characteristics of the 48 (N=48) reviewed patient files of preventable intrapartum maternal death

4.3.1 Section B: Causes of preventable intrapartum maternal deaths.

Section B of the PPIP audit tool investigated the factors that contributed to preventable intrapartum maternal deaths. Two subsections examined the primary and final causes of preventable intrapartum maternal death. From a clinical viewpoint, knowing the correlations between the primary and final causes of death might help physicians determine what to avoid during hospital stays or emergency room visits.[12] Finally, comprehending the profile of the underlying final causes of intrapartum maternal deaths may offer additional insights into the epidemiological change. Table 4.2 lists the primary causes of preventable intrapartum maternal deaths and Table 4.3 presents the final causes of preventable intrapartum maternal deaths.

Table 4.2 Primary causes of preventable intrapartum maternal deaths

Variable	Characteristics	Frequency	Percentages
Obstetric haemorrhage	Retained placenta	8	16.66%
	Ruptured uterus with previous C/S in labour	5	10.41%
	Uterine atony due to prolonged labour	3	6.25%
	Abruptio placenta without hypertension	1	2%
	Placenta Preavia	1	2.0%
Hypertension	Pregnancy-induced Hypertension	6	12.5%
	Eclampsia	5	10.41%
	HELLP syndrome	4	8.33%
Covid-19	Covid-19 pneumonia	11	22.91%
Embolism	Pulmonary embolism	1	2.8%
Sepsis	Obstructed labour	3	6.25%
	Total	**48**	**100%**

Table 4.3 Final causes of preventable intrapartum maternal deaths

Variable	Characteristics	Frequency	Percentages
Final causes of preventable	Hypovolemic shock	18	37.5%
	Respiratory failure	13	27.1%

intrapartum maternal deaths	Multiorgan failure	10	20.83%
	Metabolic acidosis	5	10.41%
	Septic shock	2	4.16%
	Total	**48**	**100%**

4.3.2 Avoidable factors of preventable intrapartum maternal deaths

Three factors contributed to the preventable intrapartum maternal deaths, namely patient, administrative and medical personnel-related factors.

Avoidable factors of preventable intrapartum maternal deaths: Patient

Table 4.4 depicts patient-associated factors that contributed to the causes of preventable intrapartum maternal

Table 4.4 Patient-associated avoidable factors of preventable intrapartum maternal deaths:

Variable	Characteristics	Frequency	Percentage
Patient-associated factors	Never initiated antenatal care	22	45.83%
	Infrequent visits to antenatal care	5	10.41%
	Delay in seeking medical attention during labour	11	22.91%
	Inappropriate response to antenatal haemorrhage	3	6.25%
	Declined admission/treatment for social reasons	4	8.33%
	Attempted termination of pregnancy/illegal drug use	3	6.25%
	Total	**48**	**100%**

- **Avoidable factors of preventable intrapartum maternal deaths: Administrative**

Table 4.5 depicts the administrative-associated factors that contributed to preventable intrapartum maternal deaths.

Table 4.5 Administrative-associated avoidable factors of preventable intrapartum maternal deaths

Variable	Characteristics	Frequency	Percentage
Administrative factors	Inadequate theatres available	20	41.66%
	Insufficient nurses on duty to manage the patient adequately	19	39.58%
	Insufficient doctors to manage the patient	12	25%
	No accessible ICU bed with ventilator	11	22.91%
	Personnel not sufficiently trained to manage the patient	8	16.66%
	Insufficient blood products available	5	10.41%
	Inadequate resuscitation equipment	4	8.33%

- **Medical personnel-associated avoidable factors of preventable intrapartum maternal deaths**

Table 4.6 depicts the medical personnel-associated factors that contributed to the causes of preventable intrapartum maternal deaths.

Table 4.6 Medical personnel-associated avoidable factors of preventable intrapartum maternal deaths

Variable	Characteristics	Frequency	Percentage
Medical personnel-associated	Management plan inadequate	16	33.33%
	Poor progress in labour but partogram not used correctly	10	20.83%
	Insufficient notes	10	20.83%
	Poor progress in labour but partogram not used	8	16.66%

	Incorrect management of hypertensive disease	7	14.58%
	Management of second stage prolonged with no intervention	7	14.58%

4.4 DISCUSSION

- **Demographic profile of women who suffered preventable intrapartum maternal death**

The results of this study further reveal that 6.25% (n=3) were women under 20 years of age while 37.5% (n=18) were women of advanced maternal age (see Table 1.1). Maternal age has a detrimental effect on the outcomes of pregnancy. Advanced maternal age refers to women who are above 37 years of age while some literature indicates women over 40 years of age. According to Kotronoulas et al, women who are past childbearing age are more likely to experience negative obstetrical and perinatal outcomes as they get older.[11] Women aged 35 to 40 had worse pregnancy outcomes than women aged 20 to 34, and women over 40 had worse pregnancy outcomes than women aged 35 to 40. These negative obstetrical and perinatal outcomes include pregnancy issues, such as ectopic pregnancy, spontaneous abortion, foetal chromosomal abnormalities, congenital malformations, placenta praevia and abruption, gestational diabetes, preeclampsia, and caesarean birth.[7] In terms of gravity, the majority of the patients 60.4% (n=29) had either three or two pregnancies. In this study, most of the women were between 20 and 37 years old and few had had five or more pregnancies. Gestational age is another factor that determines the outcome of a pregnancy. However, it does not influence preventable intrapartum maternal deaths. Of the pregnancies in the study 97.9% (n=47) were viable while only 2.1% (n=1) was a non-viable pregnancy (see Table 1.1). Women are more likely to have a successful normal vaginal birth if they have had at least one or more previous vertex vaginal deliveries. In this study, 37% (n=18) of the mothers had given birth normally to at least three healthy babies. In terms of mode of previous deliveries and outcomes, 100% (n=43) of the women had had normal vaginal deliveries, 11.5% (n=5) had had a previous caesarean section; 4.6% (n=2) had had miscarriages in previous pregnancies, and 6.9% (n=3) had had stillbirths.

Most of the pregnancies were viable (97.9%; n=47) with only 2.1% (n=1) being non-viable. A viable pregnancy refers to one that proceeds normally and in which all physical, laboratory, and imaging studies show a high possibility of having a live birth. In other words, the baby is born and has a reasonable chance of survival.[1, 14] In this study, 54.2% (n=26) initiated ANC,

while 45.8% (n=22) never initiated ANC. The World Health Organization set a national target (90%) that pregnant women should receive at least four ANC contact visits in order to achieve high-quality prenatal, intrapartum, and postpartum care for mothers and new-borns.[15] In South Africa, the National Department of Health has implemented the Basic Antenatal Care Plus (BANC Plus) since 1 April 2017, which consists of at least eight ANC visits. The BANC Plus supported the WHO recommendation to increase routine ANC contacts for all women to >12, 20, 26, 30, 34, 36, 38, 40 weeks.

- **Section B: Causes of preventable intrapartum maternal deaths**

Complications during labour and delivery account for more than one-third of maternal deaths, half of stillbirths, and a quarter of the neonatal mortality with the majority of mortalities taking place in areas with little resources.[1,4,15] The reduction of preventable maternal, perinatal, and neonatal death is a global priority, and the WHO has taken the lead in focusing on initiatives in this area.[14] Despite the availability of healthcare facilities, maternal guidelines, and protocols to provide comprehensive emergency obstetric care, the number of preventable maternal mortality remains high globally and nationally.[16] Causes of maternal deaths are classically divided into direct and indirect categories. Direct causes are ones directly associated with the pregnancy, such as pre-eclampsia or eclampsia, obstetric haemorrhage.[9,16] Direct causes of maternal results from complications of pregnancy, intrapartum and puerperium. Table 1.2 depicts the primary causes of intrapartum maternal deaths in the study.

- **Primary causes of preventable intrapartum maternal deaths**

It is vital to understand the primary causes of maternal fatalities in various countries and regions. Causes of preventable maternal deaths including intrapartum mortalities assist in establishing priorities for measures that will reduce maternal mortality for governments, international health organizations, and local organizations. In the study, obstetric haemorrhage accounted for 37.5% (n=18) of the cases, followed by hypertensive disorders (31.25%, n=15), while Covid-19 also had an adverse effect because the number of maternal mortalities rose throughout the pandemic. In this study, Covid 19 alone contributed for 22.91% (n=11) of the maternal deaths that could have been prevented. Obstetric haemorrhage, hypertensive disorders and Covid 19 were the three main causes of preventable intrapartum maternal deaths at the selected public hospital.

The findings of this study concur with a study in Peru, South America, which found that obstetric haemorrhage, pregnancy-related hypertension issues, and non-obstetric complications were the main contributors.[12] Haemorrhages, particularly postpartum haemorrhages, are the deadliest obstetric emergencies in terms of the potential death of a woman.[16] Severe maternal morbidity from obstetric haemorrhage includes hysterectomy, shock, disseminated intravascular coagulation, shock, and severe anaemia. The findings of this study are consistent with those of a study on the causes and risk factors of maternal mortality in Ogun State, Southwest Nigeria, which found that obstetric haemorrhage accounted for 43.4% and pre-eclampsia or eclampsia accounted for 36.0% of deaths.[18] A study on maternal deaths due to obstetric haemorrhage in Dodoma Regional Referral Hospital, Tanzania revealed that 38% of women died from obstetric haemorrhage which ranged from ruptured uterus, delay in managing PPH from uterine atony, and inadequate management of PPH.[16]

The results of this study concur with international and national findings. The existence of intrapartum maternal guidelines available on a national and international level justifies the necessity for relevant stakeholders and policymakers to act and consider implementation strategies. The preventable intrapartum maternal deaths in this study were due to the following causes: hypertension (31.5%, n=15), pregnancy-induced hypertension (12.5%, n=6), eclampsia (10.41%, n=5) and HELLP syndrome (8.33%, n=4). These findings are congruent with a study of 90 hospital-based maternal deaths in 11 hospitals in Indonesia, which reported that the greatest direct cause of death (42%) was severe pre-eclampsia and eclampsia combined, followed by direct obstetric reasons (24%) and direct perinatal causes (12%).[19] In this study, Covid-19 alone contributed to 22.91% (n=11) of the maternal deaths that could have been prevented. Pregnant women are more susceptible to viral infections during pregnancy because of partial immune suppression, and even seasonal influenza has a greater morbidity rate. The Covid-19 outbreak had a negative effect on expectant mothers.[19,20] According to the WHO (2022),[3] South Africa has Africa's highest Covid-19 infection and mortality rates. Covid-19 is an important cause of maternal deaths which has increased the death rate among South African pregnant women.[19] Covid-19-positive pregnant women with hypertension and diabetes mellitus are at increased risk of death.

A study conducted on tracking excess of maternal deaths associated with Covid-19 in Brazil reported that there was increased maternal mortality in 2020 from Covid 19. The study revealed that 70% of maternal deaths were attributable to Covid-19 and 30% were due to other health issues, including preventable deaths related to barriers faced by women to timely adequate maternity care and the worsening performance and quality of care.[21] A study on maternal mortality during the Covid-19 pandemic in Mexico reported that the MMR increased

by 56.8%, confirmed Covid-19 was the cause of 22.93% of cases, with 4.5% of unconfirmed Covid-19 cases of maternal deaths.[22] Routine health services were less accessible as a result of the response to Covid-19, which included various levels of lockdown, restrictions on health care, a shortage of staff due to Covid-19 infection, fear, and stigma.[20,23] South Africa's health system experienced service rationing and restricted access to health care including reproductive and maternity services due to a shortage of staff, with sick or isolated employees being redeployed to deliver Covid-19-related services as the pandemic was given priority.[20] This was demonstrated by the transformation of most of the hospital's space, such as general and maternity wards, into Covid-19 wards and isolation areas.

- **Final causes of preventable intrapartum maternal deaths**

South Africa continues to have a high rate of maternal mortality despite a global decline, with most of the maternal deaths largely preventable. Maternal deaths that could have been prevented or avoided, as well as near misses, are mostly the result of inadequate necessary training skills and care for routine management of labour and obstetric emergencies.[14] In order to evaluate the current health care system and develop strategies to decrease avoidable maternal fatalities, policymakers and other key stakeholders might benefit from knowing the causes of preventable maternal deaths.

The main causes of maternal deaths in this study were hypovolemic shock (37.5%, n=18), respiratory failure (27,1%, n=13) and multi-organ failure (20.83%, n=10) (see Table 1.3). Obstetric haemorrhage, particularly postpartum haemorrhage from retained placenta, was the major cause of hypovolemic shock. One death from an embolism and two deaths from pneumonia-related respiratory failure were reported. The findings indicate that metabolic acidosis and multi-organ failure were among the most common causes of avoidable intrapartum maternal deaths. Pre-eclampsia, eclampsia and HELLP syndrome caused multi-organ failure and metabolic acidosis. These findings concur with to the results in the saving mother report on the causes of maternal deaths in South Africa where overall 64% maternal deaths were potentially preventable with the major underlying conditions being obstetric haemorrhage (89,5%) and hypertensive disorders (70,6%).[1]

The study's findings are consistent with an Indonesian enquiry into maternal deaths that found that irreversible shock accounted for 37% of fatalities.[18] According to the analysis of pre-eclampsia and eclampsia on maternal deaths (n=38), cerebral-vascular accident (24%), multiple organ failure, and pulmonary oedema were the three most common final causes of

death in the Indonesian study on the final causes of maternal deaths.[18] A study on maternal and perinatal outcomes of hypertensive disorders of pregnancy in Ethiopia reported that hypertensive disorders, HELLP syndrome and complications such as pulmonary, oedema, kidney injury, hepatic injury, placental abruption, and aspiration pneumonia contributed to poor maternal outcomes.[24] A review of 108 pregnancies of maternal and perinatal outcomes with Covid-19 reported pregnant women presented with a fever on admission (68%), a persistent, dry cough (34%), malaise (13%), dyspnea (12%), and diarrhoea (6%), with overall compromised respiratory system complicating to covid-19 pneumonia.[25]

Avoidable factors of preventable intrapartum maternal deaths

- **Patient-associated factors**

For a successful pregnancy, it is essential to have access to antenatal care at all stages of the pregnancy, but notably at the initial booking appointment before 20 weeks.[9,6] Poor maternal outcomes and increased perinatal morbidity and mortality are more likely to occur in unbooked individuals who present in labour.[15] In this study, of the patients, 54.2% (n=26) initiated ANC, 45.8% (n=22) never initiated ANC, 22.91% (n=11) delayed seeking medical attention during labour, 10.41% (n=5) infrequently visited antenatal care. These findings indicate that early initiation of ANC in South Africa is still a problem. A study on area of focus to handle delays related to maternal death in Ethiopia identified patients' delay in deciding to seek care when experiencing an obstetric emergency (36.1%) as a contributory factor to preventable deaths.[29]

- **Administrative-associated factors**

The study found that health care system administrative-associated factors had a significant impact on the preventable intrapartum maternal deaths. The findings indicate that inadequate theatres available (41.66%, n=20), insufficient nurses on duty to manage the patient adequately (39.58%, n=19), insufficient doctors to manage the patient (25%, n=12), no accessible ICU bed with ventilator (22.91%, n=11) and personnel not sufficiently trained to manage the patient (16.66%, n=8), insufficient blood products available (10.41%, n=5) and inadequate resuscitation equipment (8.33%, n=4) were administrative factors that contributed to preventable maternal deaths. A study in public hospitals in Wollega, western Ethiopia found that nurses' lack of knowledge and a heavy workload were obstacles to providing high-quality healthcare services.[27] In their study in the Free State, South Africa, Malakoane et al found that

staff shortages and heavy workloads were an obstacle to healthcare service.[28] The results of this study confirm Ige and Cele's conclusion (2022:5) that a shortage of staff prevented South West Nigeria from implementing respectful maternity care.[29] The NCCEMD 2018 report lists issues that the National Department of Health has identified as urgently needing attention, including a critical shortage of doctors, nurses, and community healthcare workers.[1,14] To reduce preventable intrapartum maternal death, pregnant women should have access to integrated maternal, perinatal, and neonatal health services, as well as a well-coordinated and reliable referral system to the next level of specialty within the catchment area. Delayed referral, delay in performing caesarean section, delay managing PPH from uterine atony, inadequate management, inadequate skills in repairing deep vaginal tears and lacerations, delay in recognising ruptured uterus, inadequate skills in performing caesarean section were avoidable factors that contributed to preventable intrapartum maternal deaths in Dodoma Regional Referral Hospital in Tanzania.[16]

- **Medical personnel-associated factors**

The study found that of the preventable intrapartum maternal deaths, 33.33% (n=16) were due to inadequate management plan, including substandard management, inadequate assessment, misdiagnosis, and plan reviews; 20.83% (n=10) were due to poor progress in labour but partogram not used correctly; 16.66% (n=8) were due to poor progress in labour but partogram not used; 14.58% (n=7) were due to incorrect management of hypertensive disease and 14.58% (n=7) were due to management of second stage prolonged with no intervention. In their study in Indonesia, Baharuddin et al[19] found that preventable intrapartum maternal deaths were due to mainly to health care provider factors. When an obstetric emergency occurs, immediate action by a competent clinician is needed to prevent maternal mortality. A study in Tanzania found that medical personal-related factors included delay in managing uterine atony, inadequate preparation of patients with potential for developing postpartum haemorrhage and delay in recognising ruptured uterus.[16]

4.5 CONCLUSION

Despite measures introduced by the National Department of Health, preventable intrapartum maternal mortality continues to increase in the country. Although the results of this study cannot be generalised; existing figures indicate that extensive work remains to be done to accomplish the SDG target of 70/100,000 by 2030. Reducing preventable intrapartum

maternal deaths in South Africa requires national coordination and cooperation with key stakeholders in the delivery of health services, addressing the causes of maternal and perinatal deaths, and making clinical management protocols available. Most intrapartum maternal deaths could be prevented or reduced by strengthening skilled and competent midwives to deliver evidence-based care during intrapartum care to achieve best maternal outcomes.

4.6 CONFLICT OF INTEREST

The authors have no conflict of interest to disclose

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CHAPTER 5

PHASE TWO: IMPLEMENTATION OF SELECTED MATERNAL CARE GUIDELINES

5.1 INTRODUCTION

Chapter 4 discussed the baseline data of Phase 1 in article format. The main study consisted of three phases. Phase 1 determined the causes of preventable intrapartum maternal deaths; Phase 2 implemented selected intrapartum maternal care guidelines, and Phase 3 evaluated the implemented intrapartum maternal care guidelines. This chapter discusses the specific steps taken in Phase 2 in implementing the selected intrapartum maternal care guidelines to reduce preventable intrapartum maternal deaths at the selected public hospital in Gauteng.

Figure 51 illustrates the phases of the study and the activities throughout the implementation phase.

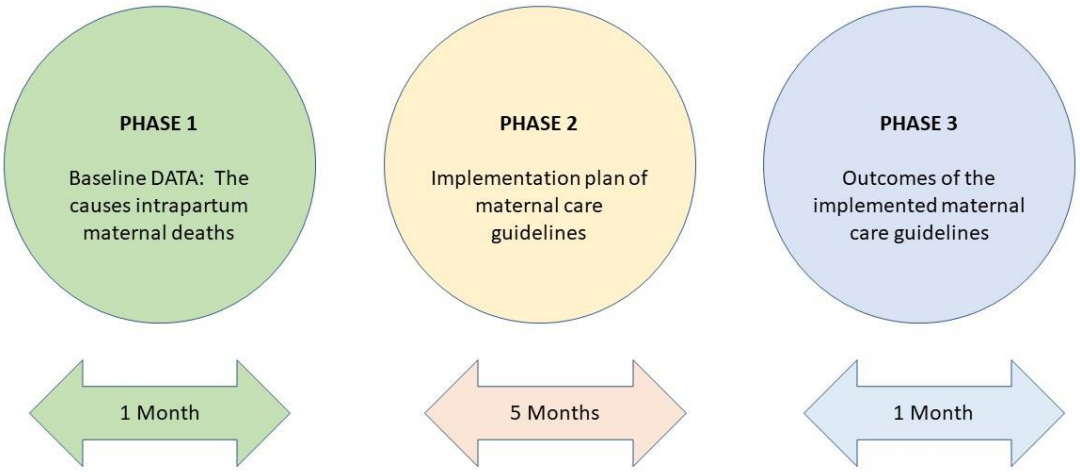

Figure 5.1 - Phase 2 - Implementation phase (Overview of the phases of the study)

5.2 OVERVIEW OF PHASE 2: IMPLEMENTATION PHASE

Phase 2 focused on the implementation of the selected intrapartum maternal care guidelines. This phase was implemented in three steps (see Figure 5.2 for a schematic representation of each step).

The objective of the implementation phase was:

- **Objective 3:** To implement three intrapartum maternal care guidelines to reduce preventable maternal deaths at a selected public hospital

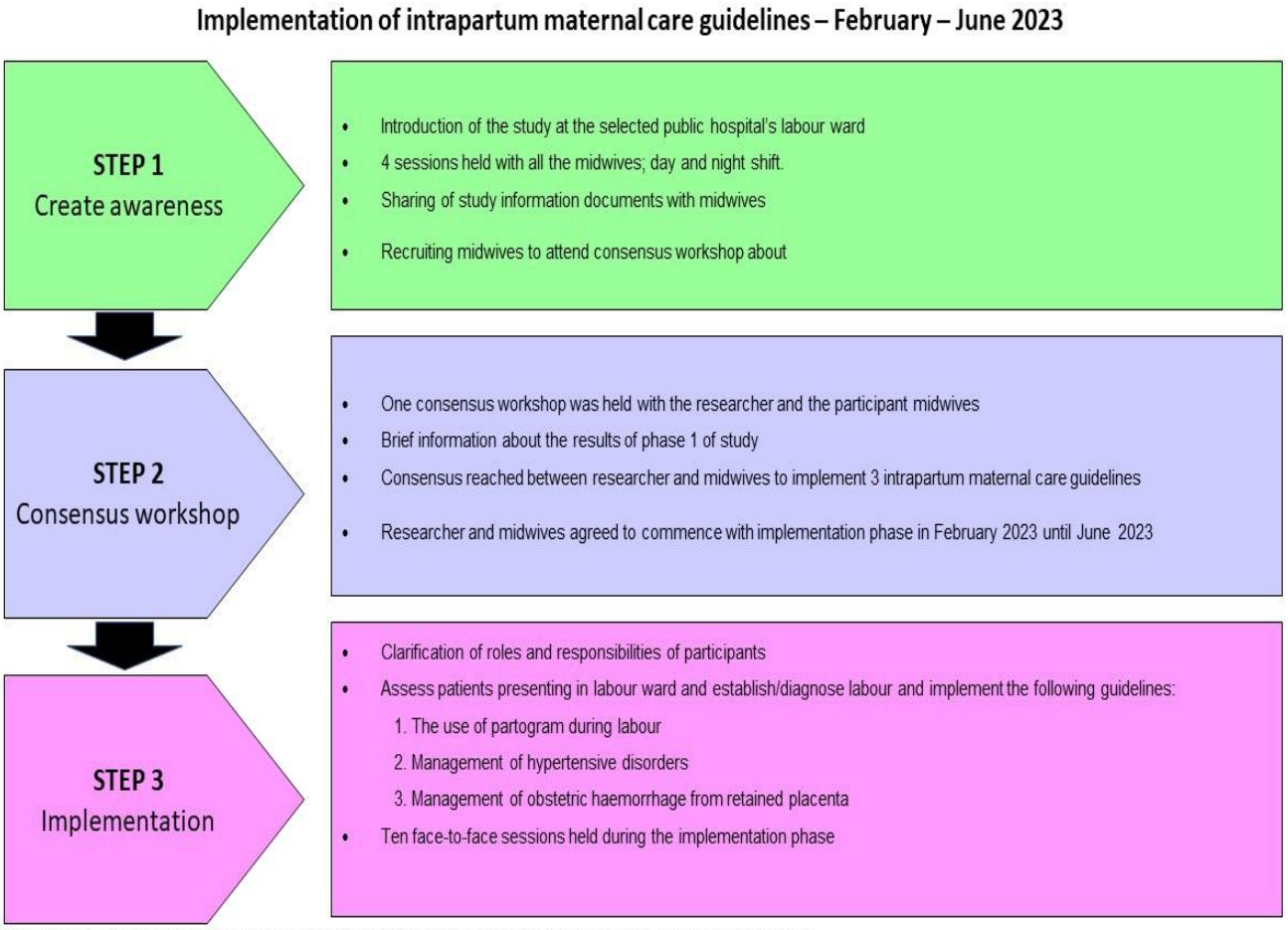

FIGURE 5.2: STRATEGY FOR THE IMPLEMENTATION OF INTRAPARTUM MATERNAL CARE GUIDELINES

5.3 DEVELOPING THE IMPLEMENTATION STRATEGY

The researcher, operational manager, shift leaders (midwife specialists), and midwives working in the labour ward at the selected public hospital developed the implementation strategy. The researcher engaged with the midwives to determine how to implement the three

selected intrapartum maternal care guidelines in the labour ward. The three steps of the implementation strategy are discussed next.

5.3.1 Step 1: Create awareness

The initial phase in the implementation strategy was to create awareness of the specified intrapartum maternal care guidelines during intrapartum at the selected public hospital. After the study was approved by the relevant research ethics committee, the University of Pretoria Research Ethics Committee (see Annexure B), and the selected public hospital (see Annexure D), the researcher visited the maternity department to introduce the study in November 2022. Four contact sessions were held with each shift in the labour ward to accomplish this. Two sessions were held on 3 and 5 November with day shift midwives and two sessions were held on 4 and 8 November with night shift midwives. The sessions wished to create awareness about the research study, and midwives who were interested could volunteer to attend the workshop and become part of this collaborative study.

The researcher together with the midwives working in the labour ward delivery section collaborated and agreed that the operational managers and midwives working in the labour ward admission should be included in the implementation strategy. The flow of patients in the maternity ward at the selected public hospital involves patients being initially assessed and diagnosed in the labour ward admission, then transferred to the labour ward for delivery. The aim was to ensure that the implementation of the selected maternal care guidelines was done by every midwife who became the first contact with the patient.

There were four shifts, namely two day and two-night shifts. This activity was done to make sure that each midwife was aware of what was expected of them, such as which intrapartum maternal care guidelines would be implemented in accordance with the consensus workshop. When a patient is admitted to the labour ward, the researcher and the midwives concurred that all intrapartum maternal guidelines should be followed. However, particular attention was given to the implementation of the three selected intrapartum maternal guidelines: using a partogram, managing hypertension conditions, and managing obstetric haemorrhage from retained placenta. The researcher and the midwives were aware of the three selected intrapartum maternal care guidelines.

Following the awareness sessions, 15 midwives indicated interest in the study. Of the midwives, 11 had basic R425 nursing qualifications of a four-year nursing course, and 4 had

a Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing Science. The workshop was conducted on 25 November 2022 to select the intrapartum maternal care guidelines the midwives wished to implement to address the factors contributing to preventable maternal deaths. The researcher sent an invitation to the workshop to the midwives who wished to participate (see Annexure J). The workshop was held in the conference centre of the selected hospital. The midwives gave informed consent to participate in the study. During the workshop, the researcher presented the findings from Phase 1 on the causes of preventable intrapartum maternal deaths.

5.3.2 Step 2: Consensus workshop

The consensus workshop was held from 08h30 to 14h00 at the conference centre of the selected public hospital. The researcher's supervisor led the workshop.

The workshop employed a qualitative approach. The objective of a consensus workshop is to have in-person discussions in a small group with quick feedback to reach consensus (Davids, Roman & Schenck 2023:27). The 15 participants in the workshop were midwives working in the labour ward of the selected public hospital. The objectives of the workshop were to select valid and relevant best intrapartum maternal care guidelines for implementation to reduce preventable intrapartum maternal deaths at the selected public hospital. The main goal was to develop ideas by employing techniques that encourage structured feedback and the synthesis of individual responses to reach an agreement (Davids, Roman & Schenck 2023:27).

The researcher welcomed the midwives and introduced the research supervisors. The researcher presented the purpose of the consensus workshop. Ground rules were set before commencement of the workshop, such as switching off the cell phones or putting them on silent mode, participants to raise their hands when they wanted to talk/comment or ask questions, and not disrupt another participant while talking. Participants were also reminded not to call each other by their names but rather refer to "Participant 1, 2, 3" etc. Participants were also shown where the restrooms/toilets were. Each participant was given a booklet and pen to take notes during the workshop. A token of appreciation was given to each participant at the end of the workshop.

The researcher first gave a PowerPoint presentation on the phase 1 findings projected on a screen (see Annexure L). Phase 1 determined the causes of preventable intrapartum maternal deaths at the selected public hospital. The primary and secondary causes of preventable intrapartum maternal deaths were presented during the session. The goal of the presentation

was to provide the midwives with current information regarding preventable maternal deaths at the hospital so they could make informed decisions when selecting the intrapartum maternal guidelines.

The midwives were divided into two groups and each group had a facilitator. The groups were labelled Group 1 and Group 2. The first round was for each group to choose maternal care guidelines that would be implemented in the labour ward to reduce preventable intrapartum maternal deaths.

To reduce avoidable intrapartum maternal d deaths, each group was given an hour to select the most effective intrapartum maternal care guidelines that could be used in the labour ward. After a 15-minute tea break, each group was given an opportunity to present their selected intrapartum maternal care guidelines. The maternal care guidelines were then considered by both groups after a discussion on the causes of preventable intrapartum maternal deaths and it was decided to choose only three intrapartum maternal care guidelines. This was guided by the results from Phase 1, which examined the causes of preventable intrapartum maternal deaths at the selected hospital.

The goal of the consensus workshop's priority health agenda was to give all the participant midwives the chance to choose maternal guidelines that, based on their own experience and using the findings of phase 1, would assist in reducing unnecessary maternal deaths. The two groups reached consensus on the selection and implementation of three intrapartum maternal care guidelines. The two groups decided unanimously on the implementation of the following three guidelines:

- ✓ The use of partogram during labour
- ✓ Management of hypertensive disorders during labour
- ✓ Management of obstetric haemorrhage from retained placenta.

Chapter 3, section 3.5, provides a detailed description of the consensus workshop. The selected intrapartum maternal care guidelines are discussed in section 5.3.3.1. After reaching consensus, the participants were asked to share their experiences of the session. The participants were happy and stated that the session created awareness as they were not familiar with the causes of preventable intrapartum maternal deaths at the hospital.

5.3.3 Step 3: Implementation of selected intrapartum maternal care guidelines

All midwives should familiarise themselves with the Maternity Care Guidelines so they can provide comprehensive clinical evidence-based midwifery practice to women during pregnancy, labour, and puerperium. The midwife follows guidelines, standard operating procedures, or protocols to assess, screen, diagnose and admit the patient in the labour ward delivery area. The maternity care record has a partogram, which is a tool that is used to assess and monitor the progress of labour. The partogram has sections to assess the woman and foetus during the first, second, third, and fourth stages of labour.

Patients who are diagnosed with hypertensive disease should be put on antihypertensive drugs according to the guidelines, which are found in the Maternity and Neonatal Care Guidelines in South Africa (2016). Before, during and after delivery, the woman should be assessed, obstetric haemorrhage diagnosed and be managed according to the management of obstetric haemorrhage stipulated in the Guidelines for Maternity Care in South Africa (NDOH 2016:83-90).

During the implementation period from February 2023 until June 2023, the researcher had sessional face-to-face meetings to discuss the progress as well as the challenges experienced by the participants and recommendations to improve the implementation phase. Face-to-face meetings were important and helped both the researcher and participants to build a better relationship. The researcher created a WhatsApp group with the permission of the participants to enhance communication in real-time and as often as possible. WhatsApp, which is commonly used in communication by all levels of society, can be used as social media to become a cheap, comfortable, and affordable distance learning facility. Effective communication technologies may be used in a variety of situations and according to the requirements and conditions of the users. As long as it is properly established to communicate information, experiences, ideas, beliefs, feelings, and attitudes between two or more individuals, good communication will result in an effective change in attitude (Susilo & Sofiarini 2021:408).

The researcher and the midwives agreed to communicate as often as possible via the WhatsApp group at least once a week. The shift leaders in the labour ward were responsible for ensuring smooth implementation, monitoring, support, and evaluation. The researcher had face-to-face meetings to discuss the previous meeting's lessons learned and shared as well as the next step in putting the intrapartum maternal guidelines into practice. The researcher had the opportunity to lead the participants, explain the challenges, and offer support during

the face-to-face sessions. This allowed the researcher to witness the regular activities of the

labour ward as well as interactions between staff members, doctors, midwives, and, most importantly, the patient, who is the end user.

The researcher met with the unit manager of the labour ward and the labour ward midwives in February 2023, and they agreed that the implementation of the three intrapartum maternal care guidelines could begin at the selected hospital. Every time there was a contact session, the workgroup was reminded of the objectives of the study and its significance that the implementation research would last for five months. The midwives and the researcher were prepared to start the implementation plan. To stay up to date on the implementation strategy, it was stressed that roles and channels of communication should be made explicit. Every shift's shift leader was responsible for overseeing the implementation plan's upkeep when the researcher was not there.

5.3.3.1 Description of the selected maternal care guidelines for implementation

Phase 1 of the study, which determined the causes of preventable intrapartum maternal deaths, guided the implementation phase. To identify the best intrapartum maternal care guidelines, the results from phase 1 were presented to the participants at the consensus workshop.

The following intrapartum maternal care guidelines were then put into effect in the labour ward of the selected public hospital:

- The use of partogram
- Management of hypertensive disorders
- Management of obstetric haemorrhage from retained placenta

To make sure that everyone was aware of what was expected in terms of the maternal care guidelines to be implemented, the researcher and the midwives discussed the three selected intrapartum maternal care guidelines. This involved determining how midwives should make nursing diagnoses from their assessment, selecting the best treatments for the woman, and evaluating the intervention. The three selected guidelines are discussed next.

- ***The use of partogram***

The use of partogram during labour has been suggested by the WHO and the National Department of Health, as an efficient technique for the early diagnosis of maternal and foetal

problems during the intrapartum period. The partogram has an alert line at a slope of 1cm per hour from the first cervical dilatation during the active phase of labour and the action line which is two hours to the right and parallel to the alert line and represents extremely poor progress where 'action' is mandatory (NDOH 2016:42). When a woman is in labour, every observation is recorded on a partogram. The partogram keeps track of the progression of labour as indicated by cervical, dilatation, head descent, and uterine contractions, as well as the foetal status as indicated by foetal heart rate, amniotic fluid colour, and foetal skull moulding, as well as the maternal parameters of pulse, blood pressure, temperature, urine output, and urine (Dalal & Purandare 2018:5). In settings with limited resources, implementation rates and the ability to utilize the partogram consistently and accurately remain low. Monitoring the progression of labour and spotting atypical labour patterns allows the partogram to be used.

According to Dalal and Purandare (2018:4), the proper use of a partogram can save the lives of both the mother and the foetus by ensuring that the labour is constantly followed and that life-threatening issues, like obstructed labour, are recognized and treated. Prolonged labour is a significant contributor to maternal and foetal death and morbidity, with common underlying causes including ineffective uterine contractions, incorrect foetal presentation or position, an inadequate bony pelvis, or abnormalities of the mother's soft tissues (WHO 2014:9).

This study found that uterine atony due to prolonged labour accounted for 6.25% (n=3) preventable intrapartum maternal deaths. Poor progress in labour but partogram not used correctly accounted for 20.83% (n=10) while poor progress in labour but partogram not used 16.66% (n=8) were among the medical personnel avoidable factors that contributed to intrapartum maternal deaths. In clinical practice, it might be difficult to pinpoint the precise cause of slowly progressing labour. Aggressive interventions, particularly caesarean sections, are linked to poor progress of labour. Poor progress is also associated with postpartum haemorrhage, which is among the most common causes of preventable intrapartum maternal death globally.

Using the findings of phase 1, the researcher reminded the midwives of the significance of using a partogram during labour. To guarantee that all midwives adhered to the usage of the partogram, shift leaders, who were advanced or senior midwives working in the labour ward, were given the responsibility of making rounds in the labour room to monitor adherence and assist the new midwives allocated in the labour ward. Every time the researcher and the midwives met on a weekly or monthly basis, it was emphasised that every time a woman was in labour, a partogram needed to be utilized.

As part of midwives' duties at the selected hospital, midwives are expected to audit at least two maternity case records. This exercise assisted in further evaluating the correct use and consistent use of the partogram. Every instance of non-compliance in the audit report was shared during morning nursing reports and used as an opportunity to improve midwifery practice.

- ***Management of hypertensive disorders***

Hypertensive disorders are one of the most common direct causes of maternal mortality and are responsible for significant perinatal and maternal morbidity. These disorders include chronic hypertension, pre-eclampsia, eclampsia and HELLP syndrome (NDOH 2016:70; Brown et al 2018:24). Early detection and timely intervention of hypertensive disorders is essential to prevent maternal and perinatal complications.

Hypertension is a systolic blood pressure ≥140 and/or diastolic blood pressure of ≥90 mmHg. Mild to moderate pre-eclampsia is a diastolic blood pressure of 90-109 mm Hg and/or systolic blood pressures of 140-159 mm Hg, with ≥1+ proteinuria with no organ dysfunction while severe hypertension is a systolic BP ≥160 and or diastolic BP ≥110 mmHg (Brown et al 2018:24; NDOH 2016:70). Chronic hypertension is best controlled by closely regulating maternal blood pressure, closely monitoring foetal growth, and periodically checking for the emergence of preeclampsia and maternal problems at a high-risk ANC clinic (Brown et al 2018:24). In this study, hypertension accounted for 31.25 % (n=15) of the preventable intrapartum maternal deaths at the selected public hospital. The most hypertensive disorders were pregnancy-induced hypertension at 12.5% (n=6), eclampsia at 10.41% (n=5) and HELLP syndrome at 8.33% (n=4). Incorrect management of hypertensive disease (14.58%, n=7) was a medical personnel avoidable factor and personnel not sufficiently trained to manage the patient (16.66%, n=8) was an administrative avoidable factor.

The researcher and the midwives decided to use the WHO and the NDOH maternity guidelines as a reference to guarantee that hypertension procedures were followed when managing hypertensive disorders throughout the intrapartum period. The hypertension guidelines were printed and posted on a notice board as well as kept in hard copy in the files in the labour ward, labour ward high care area, and labour delivery area for easier access and reference by the midwives. Before monitoring the women's vital signs, all patients admitted to the labour ward had their blood pressure checked. The vital signs comprised blood pressure, pulse,

saturation, temperature, urinalysis, and weight. Midwives were urged to use the proper technique while checking blood pressure.

During admission, midwives assessed the women for signs and symptoms of imminent pre-eclampsia such as severe persistent headache, visual disturbances, epigastric pain, hyperreflexia, clonus, dizziness, fainting, or vomiting. Use the correct cuff size (1.5 times the arm's circumference for obese patients; 15x33 cm for normal-weight patients). The patient may sit or lie on her side while the cuff is being measured, and it should be at the level of the heart (NDOH 2016:71). For manual blood pressure monitoring, the diastolic blood pressure is determined and measured at the point where the sounds disappear. In South Africa, hospitals have a doctor and midwives in the labour ward. The patient is co-managed by the doctor and midwife. Midwives in the labour ward were the first clinicians to come into contact with the patient following their admission to the hospital. The midwives perform assessments, diagnose patients, and create midwifery plans. When there are any questions, the midwife talks to the doctor about the evaluation, diagnosis, and care.

According to McCuistion et al (2020:6), patients should be considered autonomous beings capable of making decisions in their own best interests. Patients should also be protected if their decision-making abilities are impaired. Making a woman aware of her options and the potential implications of each one is part of showing her respect during labour. The right to self-determination is a cornerstone of the principle of autonomy. This means that in the labour ward, medical professionals, including midwives, must respect the woman's right to decide what is best for her and her baby, even if the midwife does not agree with the decision or thinks it is not the best course of action. The midwife's responsibility is to prevent problems and offer advice, not to assume control of the woman's life decisions.

In the labour ward, the doctor prescribes the prescription for the pharmacological control of hypertension illnesses. However, in cases of emergency, where the doctor is not available, the midwives may prescribe and give the medication to the patients following the approved guidelines and protocols. The midwives were encouraged to advocate for women during any stage of labour. Antihypertensive drugs are administered to control or cease the elevated blood pressure. Every country and health facility has different protocols and drug regimens. In this selected public hospital, the researcher and the midwives agreed to use only drug regimens approved by the National Department of Health and the hospital. The decision was

also based on the available hypertensive drugs at the hospital. The following protocols were adopted from the National Maternity Guidelines in South Africa (NDOH 2016:69-77 and Hospital Source Protocols 2023):

Mild to moderate pre-eclampsia

- Patients with mild to moderate hypertension were commenced on methyldopa/ Aldomet/Hypotone 500 mg eight hourlies.

Severe hypertension

- Severe hypertensive patients were admitted to the labour ward for high care for proper monitoring.
- Patients with mild to moderate hypertension were commenced with methyldopa/ Aldomet hypotone at 750mg to 1g.
- Amlodipine 10mg was given to patients with uncontrolled blood pressure.
- A Foley catheter was inserted and the urine output. Insert an IV line and keep the patient on restricted IV fluids. Midwives were encouraged to use a 200 mL Ringers lactate at 80ml/hr ensuring against fluid overload with strict intake and output also guarding against pulmonary oedema.
- If the blood pressure was still ≥160 mm systolic or ≥110 mm diastolic 30 minutes after nifedipine, a second dose of nifedipine was given.
- Magnesium sulphate (MgS04) prophylaxis was administered against the development of seizures: Loading dose of a total of 14g MgS04. This was done through dilution of 4g MgS04 in 200 mL sodium chloride or ringer Lactate and infused over 20 minutes and MgS04 5g was administered intramuscularly on each buttock.
- In severe acute hypertension, after three doses of nifedipine, the patient was given intravenous labetalol to control her blood pressure of labetalol is 20 mg IV. A patient who still had acute severe hypertension after 10 minutes was given a further 40 mg labetalol IVI increased as per the patient's blood pressure readings.
- Patients were maintained on MgSO4 for up to 24 hours during intrapartum or after delivery. This was given at MgS04 5g on each alternate buttock x 6 doses. Patients were observed for MgS04 toxicity.
- Blood was taken for haemoglobin, platelet count, creatinine, alanine aminotransferase (ALT), and lactate dehydrogenase (LDH) and repeated every six hours.

Eclampsia

Eclampsia, also known as generalized tonic-clonic seizures, occurs after 20 weeks of pregnancy and within 7 days of birth and is linked to proteinuria and hypertension (NDOH 2016:70).

The most decisive special management included the following:

- This was regarded as an obstetric emergency and the woman was given preference over the unborn baby.
- Patient was kept on the left side and guarded against injuries and oxygen was commenced by face mask.
- The patients were loaded with MgS04 14g and maintained on MgS04 5g 4 hourly x6 doses.
- Patients with eclampsia are restless and were given one mg of clonezapam (Rivotril©) IVI slowly to abort the seizures.

Women with preeclampsia should continue receiving antihypertensive medication during pregnancy and be monitored for preeclampsia complications at least every 4 hours in the early postpartum period and continue with antihypertensive drugs (Brown et al 2018:25). Post-delivery patients with moderate to severe hypertension were kept in the labour ward for observation until the blood pressure was controlled and discharged to the postnatal ward on antihypertensive medications and follow-up dates at the local clinic or hospital. Methyldopa was stopped after delivery and switched to other anti-hypertensive medication, if needed, especially for unresolved and chronic hypertension patients (NDOH 2016:75)

- ***Management of obstetric haemorrhage from retained placenta***

The most common and deadly birth-related complication that causes serious maternal morbidities and mortalities continues to be major obstetric haemorrhage, especially postpartum haemorrhage (PPH) including anticipated blood losses of more than 500 mL following a vaginal delivery or more than 1000 mL following caesarean delivery (Greene et al 2021:115; NDOH 2016:51). Primary postpartum haemorrhage is a rapid loss of blood from the vaginal tract within the first day of delivery. Postpartum haemorrhage is classified as mild when blood loss is 500 to 1000 mL, severe when it is 1000 to 2500 mL, and major when it exceeds 2500 mL (NDOH 2016:51). Obstetric haemorrhage, particularly PPH, and its rising trend continue to be a significant concern for service providers and professional staff both internationally and in South Africa. To enable improved research and collaborative learning, it would be beneficial to standardize the criteria of PPH as well as agreed-upon methods for quantifying blood loss (Greene et al 2021:119).

Following the determinants of the causes of preventable intrapartum maternal deaths at the selected public hospital, it was discovered that obstetric haemorrhage accounted for 37.5% (n=18). Retained placenta accounted for 16.66% (n=8), followed by ruptured uterus with previous C/S in labour at 10.41% (n=5), uterine atony due to prolonged labour at 6.25% (n=3), abruption placenta without hypertension 2% (n=1) and placenta praevia 2.0% (n=1). The final cause of obstetric haemorrhage from this study was a hypovolemic shock. The second most common cause of postpartum bleeding is thought to be an untreated retained placenta (Perlman & Carusi 2019:527).

Consensus was reached during the workshop with the midwives to include management of retained placenta within postpartum haemorrhage guidelines. When the placenta is not spontaneously delivered or fails to separate from the uterus during the third stage or within 30 minutes of the baby's birth, it is said to be retained (NDOH 2016:50; Perlman & Carusi 2019:527). When a patient has a substantial bleed before the placenta is delivered, a retained placenta may also be the reason for the bleeding. To deliver a placenta normally, the uterus must contract sufficiently for the placenta and decidua to be sheared from the uterine wall and expelled (Perlman & Carusi 2019:527)

- ***Stepwise management of obstetric haemorrhage from retained placenta***

The midwives and researcher adopted the management of retained placenta as outlined in the National Maternity Guidelines of South Africa and the selected hospital protocol (NDOH 2016:52; Hospital source, 2023).

- Preventative measure: After delivery of the infant and before diagnosis of retained placenta, active management was done to every patient to facilitate spontaneous placental separation, including oxytocin, controlled cord traction, and uterine massage. 10 Units of oxytocin IMI were administered.
- If the placenta was still retained following the prophylaxis of oxytocin, the following stepwise management was followed during the implementation phase of patients with retained placenta:
- The patient was reassured and the situation explained to gain cooperation
- A urinary catheter was inserted to empty the bladder, which allowed the uterus to achieve adequate contraction, needed for expulsion of the uterus.
- The women were observed constantly for vaginal bleeding or placental delivery.
- If there was excessive vaginal bleeding, a second line of intravenous fluid resuscitation and manual attempt was carried out.
- The midwife or the doctor manually removed the placenta using the ulnar surface of the hand. This was done only when the cervix was sufficiently open or if the placenta was partially expelled.
- If the placenta could not be delivered or if it had not been delivered after one hour of oxytocin infusion, the patients were booked for manual removal under general anaesthesia in the operating theatre. Patients were prepared for theatre and kept under constant observation while awaiting theatre.
- Antibiotics: ampicillin 1-gram IV followed by amoxicillin 500 mg three times daily orally and metronidazole 400 mg for patients who underwent aggressive management removal of retained placenta
- Patients who developed PPH were managed according to PPH guidelines.

After receiving care using the intrapartum maternal care guidelines, patients in labour were assessed to determine whether their care might be improved. The midwives assessed whether the woman's intervention and results had been satisfied and contrasted the woman's response with the anticipated outcomes (McCuistion et al 2020:6). The midwife should possess the necessary knowledge and midwifery abilities to deliver evidence-based care with clear expected results that are practical, measurable, and have appropriate deadlines. The midwife

plans for labour during the intrapartum period by the stages of labour, problems that may arise, and when to intervene when labour is not progressing as planned or by the partogram. Successful implementation of the best intrapartum maternal guidelines is characterised by the best maternal and neonatal outcomes. Patient service satisfaction is a good indicator of whether patient-centred care has been achieved. The World Health Organization's (WHO) building blocks of a health system's service delivery dimension are closely related to the improvement of hospital care quality as a critical component of strengthening the health system (Bogale 2021:11).

5.4 PERSON-CENTRED CARE APPROACH

A person-centred approach guided the implementation phase. A person-centred approach was selected as the best method for guiding the implementation of intrapartum maternal recommendations to meet study objective 2. Traditional roles and power dynamics are constantly being questioned in the healthcare industry, which affects both healthcare providers and recipients. The causes of changes in the way healthcare are delivered are varied, but one factor is that people now have easier access to information about healthcare and are better informed as a whole (Byrne, Baldwin & Harvey 2020:2). Person-centred care refers to care that is focused on and based on the unique person receiving it. Through knowledge development, the midwife plays a crucial role in the provision of high-quality, person-centered care during the intrapartum period. In the labour ward, patient outcomes typically increase when clinical practices are supported by research.

By using a practice development approach to jointly create a plan for implementing intrapartum maternal care recommendations, it was hoped to identify and describe the barriers considered to prevent the effective implementation of the guidelines in clinical practice. The midwives were able to depart from the customs and traditions of the labour ward unit and adopt evidence-based midwifery interventions because of the use of the person-centred care approach in clinical practice. To provide person-centred care, the midwife must consider the patient's needs and medical condition. It is important to acknowledge that each person has unique beliefs and objectives in life as well as opinions about what is best for them. The Health Foundation (2016:3) states that person-centred care involves collaboration between health and social care professionals and those who utilize services.

Person-centred care helps people gain the expertise, skills, and confidence they need to better manage and make decisions regarding their own health needs and medical treatment. In

South Africa, the majority of maternal and child healthcare is provided by midwives. For

women, the care given by midwives during labour is a once-in-a-lifetime experience. To offer safe care, midwives are obliged to abide by the ethical standards, rules, and laws governing their profession (SANC, 2013). Before determining the patient's sickness, a midwife must understand the patient as a unique human being and take into account all of the patient's known information from a patient-centred perspective. The main benefit of person-centred care is that it makes women feel more fully cared for as people and helps them obtain more appropriate care. However, it also has many additional advantages for both patients and medical facilities as a whole.

For the successful implementation of the intrapartum maternal care guidelines, the researcher eliminated the pre-established notions regarding the gathering, generation, and application of intrapartum maternal guidelines in clinical practice. The midwives were the go-to people for information on what does and does not work in the labour unit of the selected public hospital. As they were also involved in the patient assessment, diagnosis, and planning, other multidisciplinary teams, including the doctors working in the labour ward, were cooperatively incorporated. Person-centred care, particularly strategies like self-management support and collaborative care and support planning, can also assist services in meeting the requirements of healthcare consumers (The Health Foundation 2016:13).

Person-centred care concepts as outlined by the Health Foundation were adopted for discussion during the implementation of the intrapartum maternal care guidelines. Person-centred care and, in particular, approaches such as collaborative care support planning and self-management support can also help services respond to the needs of the growing number of people living with them (The Health Foundation 2016:13). Figure 5.1 illustrates the four principles of person-centred care. Strong collaboration between healthcare organizations, healthcare practitioners, support service staff, and patients is essential to PCC success. According to Bogale (2021:11), patient-centred care is linked to improvements in patients' general health status, efficiency in the delivery of healthcare, perception of satisfaction, meeting of expectations, and quality and service excellence. Figure 5.3 depicts the principles of the person-centred approach.

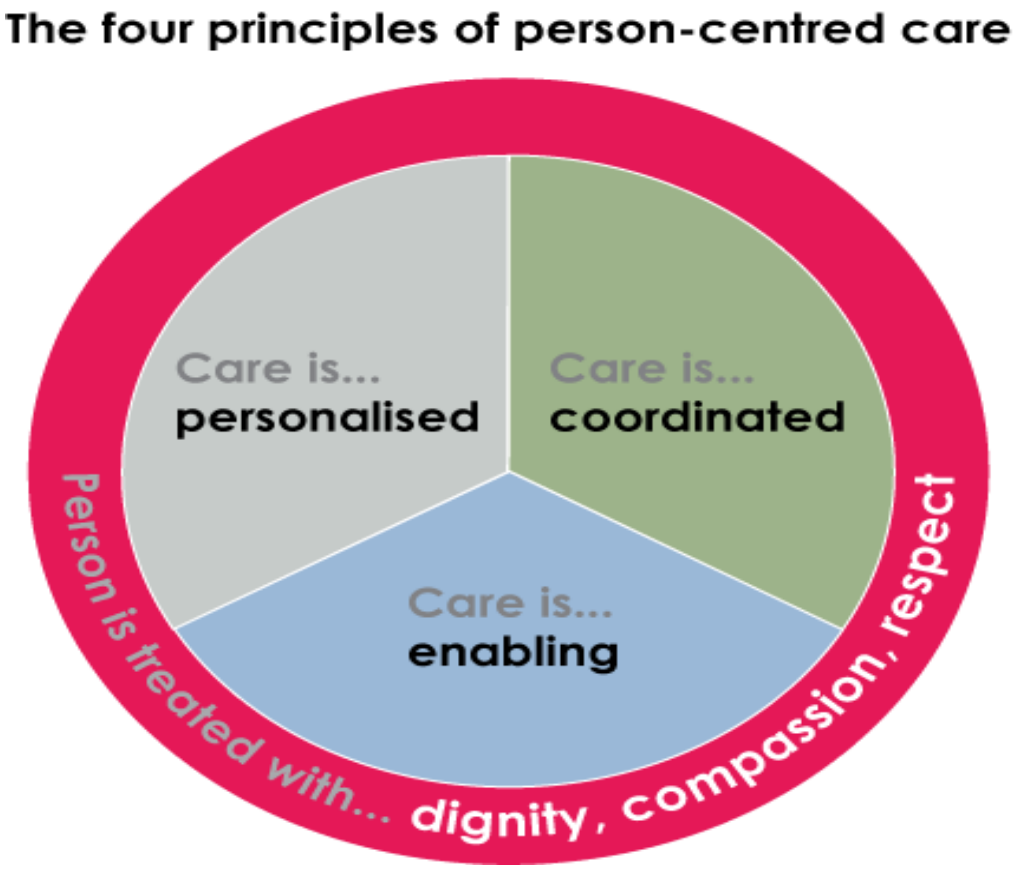

Figure 5.3 The four principles of person-centred approach

Source: The Health Foundation (2016:6)

The four principles of person-centred care are discussed next.

5.4.1 *Treat women with dignity, compassion, and respect*

By respecting the women's wishes and exhibiting compassion and empathy during the intrapartum period, person-centred care enables the midwife to preserve their dignity. Midwives are key players in the promotion of high-quality maternal health among medical professionals. A study in Ghana found that professionals engaged in care behaviours that damaged the quality of maternal health, as evidenced by frequent reports of disrespect and maltreatment of childbearing women by midwives during intrapartum care (Dzomeku, Mensah, Nakua et al 2020:1).**??** Ethics is regarded as vital to the healthcare care professions, and midwives' ethical competence is an integral aspect of their professional activity, which is

characterized by loyalty, respect, and honesty toward their patients. Additionally, midwives

must possess the skills necessary to handle and resolve ethical difficulties in the course of their everyday work (SANC, 2013).

5.4.2 *Provide coordinated care, support, and treatment*

During the implementation of the maternal care guidelines, the midwives were reminded and urged to collaborate with other medical professionals, e.g. doctors and social care service providers, to ensure the woman is provided with complete midwifery care to provide consistent person-centred care. Clinicians, especially midwives, frequently lose sight of the person behind the problem they are treating as a result of the growing demand for healthcare. Person-centred care is essential for this reason. Person-centred care assists midwives to refocus on a critical component of midwifery care to meet the woman's needs. A study in Ghana found non-evidence-based methods of preventing negative outcomes, such as actions by midwives who thought that yelling, threatening, restraining, and hitting childbearing women during the active phase of labour would prevent neonatal and maternal death (Dzomeku et al 2020:6).

The success of PCC is dependent on strong partnerships between healthcare organizations, healthcare providers, and support service staff, as well as patients. According to Bogale (2021:11), patient-centred care is associated with improved overall health status of patients, improved healthcare delivery efficiency, improved perception of satisfaction, increased meeting of expectations, and improved quality and service excellence.

5.4.3 *Offer personalized care, support, and treatment*

What works for one service user may not be appropriate for another therefore the midwives were made aware of this. The woman's capacity to recuperate or effectively manage her condition during the intrapartum period could be impacted by a standardized strategy. The midwives were reminded that by tailoring the midwifery care services to each woman's unique needs and preferences, women would be able to maintain part of their autonomy and meet their demands. The International Confederation of Midwives' code of ethics states that one important principle is that midwives keep responsibility and accountability for midwifery practice and are therefore required to set an ethically acceptable standard of practice. A

midwife is considered competent if she or he can integrate and apply the knowledge, skill, judgment, attitude, and values required to practise safely and ethically in a specific role or setting, according to the South African Nursing Council's (SANC, 2013) scope of practice.

5.4.4 Enable service users to recognize and develop their strengths and abilities

Involving women in decision-making and assisting them in taking action to support themselves are necessary components of person-centred care. They can grow their skills and gain awareness of how to care for themselves while increasing their experience of care during labour. This makes the woman feel like she has more control over her life and is less dependent on medical assistance. As a result, the midwife has more time to care for patients who have bigger dependencies.

5.4.5 *Patient assessment*

The only patient who presented in the labour ward as self-referral or was referred from a community health care centre or another hospital was assessed before the implementation of the maternal care guidelines. A patient assessment is a procedure in which a nurse or a midwife obtains, sorts, and analyses a patient's health information, using tools that are guided by the latest scientific research to find out more about the patient's general health, symptoms, and concerns. The nursing process is considered when assessing patients in midwifery and is employed to provide patients with the best care possible. An intrapartum care plan of care for the labouring woman and the unborn foetus can be developed using the nursing process, which is a systematic, logical approach that addresses health needs (McCuistion et al 2020:1). The nursing process helps the midwife to provide the woman with prioritized patient care during the antenatal, intrapartum, and postpartum periods.

Assessment of women in labour includes obtaining both subjective and objective information about their past obstetric, medical, and surgical experience, as well as doing physical examinations, abdominal palpations, and vaginal examinations to reach a patient diagnosis. The nurse's first-hand observations of the patient's health status are considered objective data. This includes gathering data through the use of individual senses like sight, hearing,

smell, and touch (McCuistion et al 2020:3). Physical examination, laboratory and diagnostic testing, information from doctors' notes and vital sign measurement are types of information gathered from labouring women. Subjective data are another type of information gathered from labouring women. Information presented verbally by the patient, family members, or friends is considered subjective data. Subjective information includes the patient's statements to the midwife regarding her health status and the health of the foetus, such as personal and family medical history, medication use, etc.

Poor or inadequate assessments of a woman during labour can endanger both the patient and the foetus. Health services should make every effort to ensure skilled professional attendance of pregnant women and quality newborn care at birth for all pregnant women (NDOH 2016:40). The majority of maternal deaths result from difficulties during labour, delivery, and the first few weeks after giving birth. A core competency that all nurses should exhibit in any area of nursing practice is timely and adequate holistic nursing assessments. Nursing focuses on safety while including the art and science of care. Through compassionate presence, it is possible to promote and maximize health and capacities, prevent disease and harm, facilitate healing and reduce suffering (Potter, Perry, Stockert & Hall, 2021). Nursing is both an art and a science therefore midwives should base their care on the body of knowledge and evidence-based practices, which are always evolving due to new developments and discoveries.

The WHO (2020:9) recommendations on intrapartum care specify evidence-based practices that should be implemented throughout labour and the immediate postnatal period and discourage ineffective practices that are against the intrapartum maternal guidelines. When providing care for a woman during the intrapartum, midwives were urged to constantly follow the nursing process. Assessment, analysis or diagnosis, planning, intervention or implementation, and evaluation are all part of the nursing process. Following the patient assessment, the midwife should prioritize concerns with the patient (McCuistion et al 2020:1). The patient's plan of care is based on the woman's diagnosis or identified problems during labour.

The selected public hospital is a busy maternity hospital that receives referrals from the local MOUs and 34 local clinics. The hospital is a tertiary hospital that provides both low-risk and high-risk obstetric care during pregnancy, labour, and puerperium. During the antenatal care period, patients are assessed by midwives or doctors and a delivery plan is made. A delivery plan is a documented plan that includes the expected date of delivery, expected place of

delivery, and the mode of delivery of a pregnant woman. The National Department of Health encourages women to deliver at healthcare facilities, preferably at MOUs and hospitals. An institutional delivery occurs in a hospital or other healthcare setting with a midwife or doctor working as a skilled delivery assistant. By ensuring safe delivery and minimizing problems associated with or occurring during labour, institutional delivery has attracted research and policy interest as a crucial and effective strategy to promote maternal health and wellbeing and to reduce maternal mortality (Dzomeku et al, 2020).

The Department of Health's maternal, child, and women's health policy has been slightly changed. In South Africa, the classification of hospitals or other healthcare facilities is based on maternal health services' degree of functioning and takes into account factors such as the number of beds available, the medical specialties that can be provided at each level of care, and the type of health professional that can be engaged there (NDOH 2016:17). For the health service to operate effectively, various levels of healthcare are necessary. In South Africa, clinics, MOUs and hospitals co-manage maternity patients for cost-effective health management as clinics and MOUs treat low-risk obstetric women during labour while hospitals provide high-risk obstetric deliveries (NDOH 2016:18). The National Department of Health has a referral system in place with specific guidelines for management, referral patterns, transportation, and the duties of the various categories of health professionals. These referral pathways include down-referrals of low-risk patients from hospital settings to MOUs and up-referral of high-risk patients from MOUs to hospitals.

Clinic health facilities typically operate only during working hours on weekdays and offer basic antenatal care, chronic disease management, child health, and family planning, whereas a Midwife Obstetric Unit (MOU), that is led by midwives, is a 24-hour comprehensive obstetric service during pregnancy, labour, and puerperium (NDOH 2016:17). In this study, there were (are) no district or regional hospitals in the catchment area, making the selected hospital the sole tertiary hospital there (see chapter 3). In addition to providing a variety of district and regional hospitals with specialty and subspecialist treatment, tertiary hospitals also act as a hub for research and the training of medical professionals.

Table 5.1 summarises the sessions held during the implementation of the intrapartum maternal care guidelines phase

Table 5.1 Sessions held during the implementation of the intrapartum maternal care guidelines

Date	Activity	Outcome	Description
February 2023 to June 2023	Implementation of 3 intrapartum maternal care guidelines 10 follow-up sessions were held with the participants. See discussion below.	The three selected intrapartum maternal care guidelines were successfully implemented in the labour ward: • *Use of partogram* • *Management of hypertensive disorders during labour* • *Management of obstetric haemorrhage from retained placenta*	Section 5.3
2 and 3 February 2023	• Initiation of the implementation phase in the labour ward. • Assessing the readiness of participants • Reminding shift leaders of their roles. • A file consisting of the maternal care guidelines was put in the labour ward nurses' station for easier access • Putting posters of the selected intrapartum maternal care guidelines on notice board, in labour wards, toilets, and cubicles (see Annexure M1 and Annexure M2) • Discussing and agreeing on the channels of communication, e.g., researcher's contact no shared again, WhatsApp group	See Chapter 6 and Chapter 7 for discussion of outcomes	

Date	Activity	Outcome	Description
9 and 11 February 2023	• A quick reference of page numbers of the selected maternal care guidelines put on the poster (see Annexure M1 and Annexure M2) • Rounds to check if posters were still on the educational board, nurses' tea/duty room, and nurses' toilets (see Annexure M1 and Annexure M2) • Reminder on the channels of communication, e.g., researcher's contact no shared again, WhatsApp group • Discussion of their experiences and asking if any challenges regarding the implementation of maternal care guidelines	See Chapter 6 and Chapter 7 for discussion of outcomes	
Date	**Activity**	**Outcome**	**Description**
8 March 2023	• Follow up, monitoring and • ensuring there is continuity in the implementation phase • Rounds done to evaluate if participants were implementing the maternal care guidelines Assessing patient records such as partograms, patients admitted with hypertension, and those who had retained placenta	See Chapter 6 and Chapter 7 for discussion of outcomes	
22 March 2023	• Discussion of participant's experiences and asking if any challenges regarding the implementation of maternal care guidelines. • Checking if posters were still available on the educational board (See Annexure M1 and Annexure M2)	See Chapter 6 and Chapter 7 for discussion of outcomes	

Date	Activity	Outcome	Description
	Assessing patients records such partogram, patients admitted with hypertension and those who had retained placenta and communicating with participants when necessary.		
25 April 2023	• Follow up, monitoring, and ensuring there is continuity in the implementation phase • Rounds to check patients' records such as partogram, patients admitted with hypertension, and those who had retained placenta and revert to participants. • Discussion of their experiences and any challenges regarding the implementation of the intrapartum maternal care guidelines	See Chapter 6 and Chapter 7 for discussion of outcomes	Section
Date	**Activity**	**Outcome**	**Description**
17 May 2023	• Follow up, monitor, and ensure there is continuity in the implementation phase • Discussion of midwives' experiences and any challenges regarding the implementation of the intrapartum maternal care guidelines • Compliance check by assessing patients' records such as partogram, patients admitted with hypertension, and those who had retained placenta	See Chapter 6 and Chapter 7 for discussion of outcomes.	Section
3 and 21 June 2023	• Final months of implementation of the intrapartum maternal care guidelines • Rounding up to check if the standard has been maintained on the implementation of intrapartum		

Date	Activity	Outcome	Description
	maternal care guidelines • Rounds to check patients' records such as partogram, patients admitted with hypertension, and those who had retained placenta and giving feedback to participants Discussion of their experiences and any challenges regarding the implementation of the intrapartum maternal care guidelines		

5.5 CONCLUSION

This chapter discussed Phase 2 of the study which was the implementation of selected intrapartum maternal care guidelines, namely use of the partogram, management of hypertensive disorders during labour, and postpartum haemorrhage from retained placenta, at the selected public hospital. Although there are available national and international intrapartum maternal guidelines, women continue to die every day while giving birth from largely preventable causes, hence the study focused on implementation research. By empowering qualified and competent midwives to provide evidence-based care during intrapartum following appropriate guidelines, best maternal outcomes can be achieved as well as the prevention and reduction of intrapartum maternal deaths.

Chapter 6 discusses Phase 3 of the study, which provides the evaluation of the outcomes of the implemented intrapartum maternal care guidelines.

CHAPTER 6

PHASE THREE

OUTCOMES OF THE IMPLEMENTATION OF MATERNITY CARE GUIDELINES

INDIVIDUAL NARRATIVE INTERVIEWS

6.1 INTRODUCTION

Chapter 5 described the *causes* of preventable intrapartum maternal deaths in the selected public hospital in Gauteng Province. The overall aim of the study was to investigate the causes of preventable intrapartum maternal deaths at the selected public hospital, implement intrapartum guidelines for maternity guidelines, and evaluate the outcomes. Phase 3 focused on the evaluation of the implementation of the three selected guidelines for maternity care during the intrapartum period. This chapter presents the findings from the individual narrative interviews conducted with the participant midwives on their experiences and the value of the implementation of the selected guidelines.

6.2 PHASE 3: REPORT ON THE OUTCOMES OF THE IMPLEMENTATION OF THE GUIDELINES FOR MATERNITY CARE

Phase 3 of the study focused on the outcomes of the implemented intrapartum guidelines at the selected public hospital.

The objective of this phase was:

Objective 3: What are the outcomes of the implemented intrapartum guidelines to reduce preventable maternal deaths at the selected public hospital in Gauteng province?

In phase 2, the researcher in collaboration with the midwives, shift leaders and labour ward operational managers implemented specific intrapartum maternity guidelines based on the findings of Phase 1: the causes of preventable intrapartum maternal deaths at a selected public hospital. The implemented intrapartum guidelines were selected from the National Department of Health's Guidelines for Maternity Care in South Africa (NDOH, 2016).

In Phase 3, the researcher collected data to evaluate the outcomes of the implemented guidelines in the labour ward of the selected public hospital in focus group interviews and individual narrative interviews. This chapter discusses the outcomes of the narrative interviews. The main objective of implementation research in the health care context is to improve the quality of care and health outcomes of patients through implementing clinical guidelines or protocols, health care programmes, or individual practices collectively called interventions. Phase 3 was informed by Phase 2 in which the researcher adopted a bottom–up approach during the implementation of the maternal guidelines. Healthcare professionals, working on the ground play a significant role in the implementation and maintenance of clinical interventions. Healthcare systems across the world frequently use a top-down approach and centralized management. Although the top-down strategy helps bring about change, the effects may only last a short while due to frontline workers' low participation and lack of ownership (Malicka & George 2021:12).

The key elements of health care interventions, such as how an intervention can be effective and how to support it in the best way possible, can be improved and prioritised by implementation outcomes (Schultes 2023:197). Implementation research encourages researchers to discuss the outcomes of the intervention that was being implemented as well as the implementation strategy approaches that were employed to encourage the implementation of the evidenced intervention (Pinnock et al, 2017). This study wished to describe midwives' personal and professional experiences regarding the outcomes of the implemented intrapartum maternal guidelines.

6.2.1 Data-collection: Narrative interviews

Data was collected using an interview guide containing one open-ended question:

What did the implementation of maternity care guidelines to reduce preventable intrapartum maternal deaths journey mean to you personally and professionally?

The participants were asked to complete the interview guide. This allowed the participants to describe their experiences regarding the implementation and outcomes of the selected guidelines for maternity care. Individual narrative interviews allowed the participants to narrate their lived experiences during the implementation of the selected guidelines. The researcher asked all the participants to write down what the value of the implementation of the intrapartum guidelines was for them personally and professionally. This method also provided the researcher with a complete story to better understand the participants' individual experiences.

The Guidelines for Maternity Care in South Africa, a manual for clinics, community health centres, and district hospitals, were developed by the National Department of Health (NDOH 2016). These maternity guidelines are for health professionals, including doctors, midwives, and anaesthetic doctors, who provide obstetric, surgical, and anaesthetic services to pregnant women in primary healthcare facilities where specialised medical care is typically unavailable (NDOH 2016:8–9).

The interview guide had instructions on how the participant should complete and submit the completed interview guide to the researcher. The interview guides were labelled Participant No 1, 2, 3 etc in order to maintain privacy and confidentiality. The researcher distributed the interview guides to the participant midwives working in the labour ward at the selected public hospital as they had all participated in the implementation of the selected maternity guidelines during the intrapartum period. Data was collected over a period of one week (14 July to 21 July 2023). The midwives were instructed to return the interview guide to the researcher as soon as they had completed it and further not later than 7 days after it was distributed. A total of 20 participants submitted completed interview guides to the researcher. Data saturation was achieved at Participant 15, but to confirm data saturation, the researcher analysed the remaining 5 interview guides. Table 6.1 presents the participants' demographic profile.

The researcher visited the labour ward of the selected hospital to inform participants and ask them to voluntarily take part in the study. The WhatsApp group used during the implementation of the intrapartum maternity guidelines was also used to recruit participants. To be included in the study, participants had to be midwives or midwife specialists registered with the South African Nursing

Council (SANC), working in the labour unit at the selected public hospital during the six-month implementation period in the specific labour ward with at least 2 or more years of experience working in the labour unit, and give written informed consent to participate in the study. The researcher distributed 23 narrative interview guides to participants who met the inclusion criteria and who consented to participate in the study and 20 participants returned completed interview guides. Data saturation was achieved at participant 15, but to verify data saturation, the researcher analysed the remaining 5.

Table 6.1 Participants' demographic profile

Code	Age	Gender	Qualification	Years of experience
P1	56	Female	Diploma in Nursing (Basic R425) & Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing Science	16
P 2	33	Female	Diploma in Nursing and Midwifery	11
P 3	31	Female	Diploma in Nursing Science (Basic R425)	5
P 4	27	Female	Diploma in Nursing Science (Basic R425)	3
P5	36	Male	Diploma in Nursing Science (Basic R425)	4
P6	29	Female	Diploma in Nursing Science (Basic R425)	3
P7	41	Female	Bachelor of Nursing Science (Basic R425) & Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing Science.	14
P8	24	Female	Diploma in Nursing Science (Basic R425)	5
P9	46	Female	Bachelor of Nursing Science (Basic R425)	15
P10	25	Female	Diploma in Nursing and Midwifery	3
P11	33	Female	Diploma in Nursing Science (Basic R425)	7
P12	28	Female	Diploma in Nursing Science (Basic R425)	5
P13	39	Female	Diploma in Nursing Science (Basic R425)	11
P14	37	Female	Diploma in Nursing Science (Basic R425)&Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing Science	9
P15	34	Female	Bachelor of Nursing Science (Basic R425)	3
P16	26	Female	Diploma in Nursing Science (Basic R425)	4
P17	29	Female	Diploma in Nursing Science (Basic R425)	7
P18	51	Male	Diploma in Nursing Science (Basic R425) & Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing Science.	19
P19	44	Female	Diploma in Nursing Science (Basic R425)	14
P20	35	Female	Bachelor of Nursing Science (Basic R425)	8

Source: The Hospital (2023)

The participants were between 24 and 56 years old, and had between 3 and 16 years of experience. There were three categories of nursing qualifications. Most of the participants had a basic R425 nursing qualification, which was a four-year nursing course, offered at nursing

colleges and universities. After completion of the course, a nurse was qualified in General Nursing Science, Community, Psychiatric, and Midwifery. The R425 course was phased out in 2019. The Postgraduate Diploma in Advanced Midwifery and Neonatal Nursing Science is a postgraduate diploma provided at nursing colleges and universities. The objective of the Postgraduate Diploma in Midwifery and Neonatal Nursing Science is to acquire knowledge and proficiency in midwifery as a specialist, including a thorough examination of theories, procedures, and research techniques in the area. The range of activities include, but is not limited to, screening, preventing illness and injury, comprehensive assessment, making a nursing or midwifery diagnosis, planning, appropriate management, identification, and referral of complications to appropriate healthcare professionals for further management of the pregnant woman.

For a Postgraduate Diploma in Midwifery, nurses undergo a one-year training course at nursing colleges while at universities the training is two years. The South African Nursing Council (SANC) is responsible for setting, maintaining and regulating the standards of nursing education and practice in South Africa in terms of Nursing Act, 33 of 2005, and publishes regulations regarding the scope of practice for nurses and midwives.

6.2.2 Data analysis

Data collection was done using a narrative interview guide in which the participants shared their personal and professional experiences hence there was no need to transcribe the data. The participants completed the interview guide in English. The researcher used content analysis to analyse the data. Qualitative content analysis is the analysis of the content of narrative data to identify prominent themes and patterns (Polit & Beck 2020:261). The researcher read the individual narratives closely and repeatedly to group and organise significant aspects of the participants' experiences into themes. Additionally, the researcher's supervisors performed co-coding to identify recurring themes from the narrative interview guides. Consensus was reached between the researcher and the supervisors.

6.3 FINDINGS AND LITERATURE CONTROL

The study described the participants' experiences regarding the outcomes of the implementation of selected maternal guidelines to reduce preventable intrapartum maternal deaths. Data analysis, discussion and interpretation revealed four interrelated themes in the participants' experiences of the outcomes of the implemented intrapartum maternal guidelines. The themes were (1) adherence to intrapartum maternal guidelines; (2) improved decision making, (3) effective intrapartum maternal guidelines, and (4) barriers to effective implementation of intrapartum maternal guidelines. Table 6.2 summarises the themes and subthemes of the participants' experiences of implementation of the selected guidelines.

Table 6.2 Themes and subthemes related to the participants' experiences regarding the implementation of selected maternal care guidelines

Theme	Sub-theme
1. Adherence to intrapartum maternity care guidelines	1.1 Evidence-based practice
2. Improved decision-making	2.1 Improved midwifery practice 2.2 Patient advocacy
3. Effective intrapartum maternity care guidelines	3.1 Improved patient outcomes
4. Barriers to effective implementation of intrapartum maternity care guidelines	4.1 Inadequate infrastructure 4.2 Administrative/health care system failure 3. Shortage of staff

6.3.1 Theme 1: Adherence to intrapartum maternal guidelines

The participants experienced the selected maternal guidelines as important and felt that all midwives need to implement the guidelines. The participants valued and supported the guidelines, and added that the guidelines served as guidance throughout intrapartum care. Implementing evidence-based practice is one of the most critical strategies for improving maternity care because it helps midwives render comprehensive quality care services to pregnant women. In Iran, Azmoude, Aradmehr and Dehghani (2018:127) found that midwives at two public hospitals

expressed a positive personal and professional attitude towards evidence-based practice. Approved and scientifically supported care interventions are mandatory for midwives at all times. Daemers, van Limbeek, Wijnen et al (2017:5) found that Dutch midwives highlighted using local protocols and international and national norms as sources of information.

6.3.1.1 Subtheme 1.1: Evidenced-based practice

The participants indicated that they were familiar with the Guidelines for Maternity Care in South Africa (NDOH, 2016). Implementation research is a scientific investigation into the processes and factors that influence the implementation of evidence-based programmes and policies in real-world situations (Mazzucca, Arredondo, Hoelscher et al 2021:136; Peters, Adam, Alonge et al 2013:1). All the participants indicated that they adhered to the selected intrapartum guidelines for maternity care because they are evidence-based practice. The participants added that adherence to the Guidelines for Maternity Care is a requirement by the Department of Health and the South African Nursing Council.

Participant responses are provided next (F refers to a female participant and M to a male participant). According to participants

> These maternity care guidelines are very important especially during the intrapartum period. These guidelines changed how I thought, especially in a busy hospital like this. I thought it was not possible to implement them, especially the partogram. (P1, F)
>
> The maternity guidelines are effective and a requirement by the Department of Health and SANC. (P12, F)
>
> The selected maternity guidelines are working and are not something new, they are in the South African National Maternity guidelines and also our scope of practice as midwives. (P17, F)
>
> The maternity guidelines also helped to reduce maternal deaths in a short space of time, especially preventable maternal deaths, even fresh stillbirths. I wish we continue using the intrapartum guidelines even after the study because they're evidenced-based practices, but we need support, especially with this situation of shortage of staff. (P11, F)

According to the participants, the implementation of the selected maternity guidelines considerably improved patient outcomes and reduced the maternal mortality. Quality of care refers to the degree to which healthcare services are given to patients to achieve the desired outcomes (WHO, 2015). All the participants stated that the guidelines for maternity care are important as they are evidenced-based and if implemented successfully could improve patient care and reduce preventable intrapartum maternal deaths. Furthermore, the participants felt confident and stated that they would continue implementing the selected guidelines for maternity care after the study was completed. The National Department of developed the Guidelines for Maternity Care are based on the WHO standards and include preventable causes of maternal deaths, the prevention and management thereof, as well as care of pregnant women during pregnancy, childbirth, and puerperium (NDOH 2016:12-13).

In their study on the completion of partograms, knowledge, attitudes, and practices of midwives in a public health obstetric unit in Bloemfontein, South Africa, Brits, Joubert, Mudzwari, Ramashamole et al (2020:301) found that while the participants had a positive attitude towards the use of a partogram, they lacked key skills in identifying foetal distress, maternal wellbeing, and monitoring labour progress. In a cross-sectional survey, Maphasha, Govender, Motloba and Barua (2017:82) found that doctors and midwives at Odi District Hospital in Gauteng, South Africa, had poor knowledge of the partogram, which led to insufficient use of the partogram.

The reasons for not using the partogram included not knowing how to use a partogram; non-availability of partogram charts; a partogram takes too long; being extremely busy, and feeling that the partogram was not the doctor's responsibility (Maphasha, Govender, Motloba & Barua 2017:86).

6.3.2 Theme 2: Improved decision making

The participants reported that the implementation of the selected guidelines for maternity care improved their decision-making. The participants stated that they used to wait for the doctor to manage patients when they knew they could intervene and help the women while waiting for the medical doctor.

6.3.2.1 Subtheme 2.1: Improved midwifery practice

The participants stated that they transformed the management of patients by implementing the guidelines even in the absence of a medical doctor. Some participants managed obstetric emergencies, especially the administration of life-saving drugs during an emergency like postpartum haemorrhage. However, the participants found that they needed to acknowledge that they were independent practitioners who are expected to provide care even in the absence of a medical doctor. Midwives can help to substantially reduce preventable intrapartum maternal morbidity and mortality. Nove, Friberg, de Bernis et al (2021:e24) state that to be a part of a team with enough expertise and to operate in a supportive environment, midwives must possess the skills and competencies outlined in the International Confederation of Midwives' recommendations. The International Confederation of Midwives (ICM) promotes, advocates for, and works to improve midwives' professional associations on a global level. The ICM disseminates fundamental competencies for midwifery practice that outline the profession's comprehensive scope. The goal of the ICM is to strengthen midwives' associations and advance the profession of midwifery globally by endorsing independent midwives as the most suitable carers for women who are expecting children and in maintaining normal birthing practices to improve the reproductive health of women, newborn babies, and their families (Fullerton, Butler, Aman et al 2021:751). The healthcare system would not function without nurses and midwives, who are sometimes referred to as the cornerstone or heartbeat of healthcare. To carry out their responsibilities and provide comprehensive patient care competently, ethically, and legally, nurses need extensive knowledge. Over the past 20 years, nurses' and midwives' roles have altered dramatically, incorporating an increase in nursing specializations, autonomy, and accountability (Singh & Mathuray 2018:123).

In South Africa, midwives are nurses who specialize in providing care to expectant women during pregnancy, labour, and puerperium. In South Africa, most pregnant women use the public healthcare system, and midwives who can function independently under the conditions of healthy pregnancies offer maternity services or care. In particular, midwives who have completed a postgraduate diploma in Advanced Midwifery and Neonatal Nursing Science should be able to provide emergency obstetric care, including but not limited to shoulder dystocia, breech delivery, obstetric haemorrhage, and management of hypertensive disorders.

The participants indicated that the implementation of the selected maternity guidelines had improved their midwifery practice at the selected public hospital. According to participants,

> Thanks to the study and the maternity care guidelines, they improved my knowledge and skills to make decisions to save the lives of women especially when the medical doctor is not in the labour ward or theatre because sometimes the doctor rushes too for second theatre. (P6, F)
>
> At least I can save the lives of women and babies by simply following the maternity guidelines during labour. The good thing is that if they can get approved, we can apply them with confidence. Importantly, this research study helped us as midwives because at least we will be taken very seriously that we can do these things, like managing emergency cases, giving drugs. We need support from nursing managers and doctors to trust us like the midwives who work in that the MOU (Midwife Obstetric Unit).The study allowed us to advocate for the women because we referred to approved guidelines. I saved the woman's life. (P15, F)
>
> These maternity care guidelines are necessary, especially in case of emergency, the midwife is able to execute care even in the absence of a medical doctor or consultant. I don't have to wait for a medical doctor. (P4, F)

The participants experienced the selected maternal guidelines as effective since they are aligned with the World Health Organization, are nationally recognised and are evidence-based protocols. Midwives should use the best available evidence in executing and making decisions about the care of women during pregnancy, labour, and puerperium.

Evidence-based practice (EBP) refers to the integration of the most recent available evidence with clinical judgment, patient preferences, and clinical problem-solving techniques that de-emphasize decision-making based on tradition. EBP or clinical intervention should aim to improve patient outcomes (Polit & Beck 2017:76). Evidence-based midwifery practice is widely acknowledged as a norm for improving and delivering high-quality, safe patient care that produces the best intrapartum maternal and foetal or neonatal outcomes. The World Health Organization promotes and supports the use of the best available evidence in clinical care and discourages the use of routine interventions in maternal care. Making healthcare decisions for effective and efficient implementation of maternal intrapartum guidelines requires a midwife who possesses critical thinking abilities because a critical-thinking midwife is highly likely to be creative in the care of women during childbirth (Chabeli, Malesela & Nolte 2017:9).

The implementation of the intrapartum maternity guidelines begins with the fundamental idea of giving women during labour dignified maternity care. According to the WHO (2018:3), respectful maternity care is care organised for and given to all women with an approach that maintains their

humanity, privacy, and confidentiality, ensures autonomy from harm and abuse, and allows for well-informed decisions and ongoing support during the intrapartum period. Every pregnant woman ought to receive quality intrapartum care, and respectful maternity care is an essential element of such care (Downe, Lawrie, Finlayson & Oladapo 2018:2).

A study in Ghana explored the awareness and role of charge midwives in promoting respectful maternity care (RMC) at a tertiary health facility (Dzomeku, Boahmah Mensah, Nakua et al, 2021:4). Dzomeku, Boahmah Mensah, Nakua et al (2021:5) found that a four-day training programme on RMC, the midwives reported improved communication and relations with patients, and a greater understanding of their concerns.

In the Nethelands, Daemers, van Limbeek, Wijnen et al (2017:5) explored the factors that influenced clinical decision-making of Dutch primary care midwives. The study found that the midwives' decision-making was influenced by seeing the pregnant woman as a whole person; their sources of knowledge; the collaboration between maternity care professionals, and the organisation of care. The study found that reading the National Midwifery Journal, engaging in working groups, continuing education, using the Internet, and consulting colleagues assisted and impacted their decisions (Daemers et al 2017:5). Decision-making and problem-solving are essential intrapartum care competencies expected of midwives, and cannot be accomplished without professional judgment expertise (Chabeli, Malesela & Nolte 2017:17).

6.3.2.2 Subtheme 2.2: Patient advocacy

The participants indicated that through the improved knowledge and skills they were able to advocate for the patients during the intrapartum period. The developments in medical sciences and technologies, which have produced new methods of providing treatment, have revolutionised healthcare policies. Patients need an advocate because they find it difficult to make decisions and obtain information that is pertinent to their health (Abbasinia, Ahmadi & Kazemnejad 2020:142). In nursing, patient advocacy implies speaking and acting in a way that helps patients, who might not be able to make decisions about their health. According to Nsiah, Siakwa and Ninnoni (2019:1124), the current focus on patient safety has raised awareness of the crucial role advocacy plays in supporting safe clinical practice. Midwives act as advocates for women during labour by talking with other members of the multidisciplinary team, most often an obstetrician or medical

practitioner, about patient assessments, diagnoses, and treatment plans. In a clinical environment, patient advocacy focuses on health issues, healthcare options, patient requirements, and public health needs (Nsiah, Siakwa & Ninnoni 2019:1124).

The participants indicated that they had advocated for patients. According to participants,

> Following the guidelines for maternity care helped because we were able to advocate for patients. Like when the doctor refused to book the patient which was a slow progress, I told the doctors about the maternity care guidelines. We just need to know and practice the maternity guidelines. Doctors become serious when you talk and you mention guidelines. The patient was booked for caesarean section. (P15, M)
>
> In the management of patients, I realised doctors take midwives seriously when they refer to evidence, like mentioning the maternal guidelines. (P20, F)
>
> The maternity guidelines are useful especially when the doctor refuses to book a patient for a caesarean section, for instance, slow progress. Just by referring to the maternity guidelines, it becomes easier. Actually, it minimises conflict between midwives and doctors. (P8, F)

In hospitals, nurses act as guardians, advocates, and social workers for their patients, especially when those patients are in danger (Alanezi 2022:2602). The code of ethics for nurses mandates that all nurses, including midwives, respect human rights, make sure the person receives accurate, adequate, and timely information, meet the individual's health and social needs, and advocate for equity and social justice in access to healthcare resources (Abbasinia, Ahmadi & Kazemnejad 2020:148).

The findings of this study concur with Nsiah, Siakwa and Ninnoni's (2019:1124) definition of patient advocacy in the clinical context by registered nurses. Patient advocacy refers to advancing patient safety and high-quality care through activities like patient protection, serving as their voice, delivering high-standard medical care, fostering interpersonal relationships, and patient education (Nsiah, Siakwa & Ninnoni 2019:1124). A study on nurses' attitudes towards patient advocacy in a single tertiary care hospital in Riyadh, Saudi Arabia found that nurses were more likely to act as patient advocates when their patients were in danger and that doing so did not put their employment at risk (Alanezi 2022:2602).

Nurses are willing to speak out for patients and have a good understanding of patient advocacy. Patient advocacy reduced the workload for nurses, ensuring that patients received caring and

quality care, recovered quickly, and placed as little strain as possible on the healthcare system (Nsiah, Siakwa & Ninnoni 2019:1131). Most nurses have a positive attitude towards patient advocacy and therefore patient advocacy should be maintained to have quality patient care (Alanezi 2022:2607).

6.3.3 Theme 4: Effective intrapartum Maternity Care Guidelines

The participants stated that the Guidelines for Maternity Care were appropriate and effective. Some participants stated that the implementation of the selected guidelines had reduced maternal deaths. Initially, some participants felt that the implementation of the selected guidelines would cause disruption of services, but found that was not the case.

6.3.3.1 Subtheme 3.1: Improved patient outcomes

The participants perceived the selected maternal guidelines as useful and relevant by the part and indicated that they would continue to adhere to them and also encourage other midwives and multidisciplinary teams, including medical doctors, to use them. As a unit manager, a midwife uses information that is based on evidence to inspire and motivate staff members to adhere to best intrapartum care practices (Chabeli, Malesela & Nolte 2017:16). The participants stated that the implementation of the selected maternity care guidelines improved the use and plotting of the partogram. Some participants indicated that they were reluctant to use the partogram, especially when the labour ward was busy. Moreover, the participants found that the medical doctor had started plotting the partogram. According to participants:

Maternal deaths have reduced and even patient safety incidents. Two maternal deaths in 5 months! We used to have 3 or 4 in a month and most deaths were avoidable. I was reluctant when we started, but I realised that it is in our scope of practice as midwives to provide safe care. I also felt like this research was going to disturb our routine, but it helped us, seriously. (P14, F)

Due to the labour ward workload, I always thought it is not possible, especially record-keeping and plotting of partogram. It is feasible and reduced patient safety incidents (PSI). (P6, F).

The use and plotting of the partogram has improved and even the doctors have started plotting. They used not to plot because they thought it is not their responsibility. (P9, F)

> Though it is not easy, but these maternal guidelines are effective, and their implementation also helped to reduce even patient complaints. (P3, F)

The World Health Organisation recommends a positive childbirth experience, which should be experienced by all women during labour. The WHO (2018:12) defines a positive childbirth experience as one that meets or exceeds a woman's prior sociocultural and personal beliefs and expectations, such as having a healthy baby in a clinically and psychologically safe environment while receiving ongoing practical and emotional support from a birth companion or clinical staff with the necessary technical skills. According to the World Health Organisation (WHO, 2020:1) In Indonesia, Baharuddin, Amelia, Suhowatsky, Kusuma et al (2019:62) emphasised that successful implementation of crucial intrapartum guidelines, such as monitoring during labour and delivery, early abnormality recognition, prompt intervention, and management of complications, is essential to reduce preventable intrapartum maternal deaths.

The National Guidelines for Maternity Care are recognised as national guidelines and are updated and reviewed by specialists from all nine provinces in South Africa, and clinics and hospitals construct clinical protocols derived from the national guidelines. Health facilities should ensure that the National Guidelines for Maternity Care and relevant clinical protocols are accessible and implemented in every setting where deliveries are performed (NDOH 2016:9). Annual interim studies and triennial reports, which include chapters on the primary and final causes of maternal death, including the preventable ones, are published by the Saving Mothers Reports. To determine the necessary recommendations that must be implemented to reduce the maternal mortality rate in South Africa, national and provincial stakeholder workshops are held before the findings are made available to provinces, districts, and academic institutions.

6.3.4 Theme 4: Barriers to effective implementation of intrapartum maternal guidelines

Barriers to effective implementation of intrapartum maternal guidelines had three sub-themes, namely: inadequate infrastructure, health system failure, and shortage of staff. All the participants raised concern about the barriers to effective implementation of the maternal guidelines. Their concerns related to infrastructural challenges, administrative/health care system failure, and

shortage of staff and equipment. According to the participants, the infrastructure was the biggest challenge as patients were seated on benches which made it difficult to monitor both maternal and foetal wellbeing. The key challenges facing healthcare systems in Africa include a shortage of human resources, inadequate funding for healthcare, and inadequate leadership and management (Oleribe, Momoh, Uzochukwu et al 2019:395).

6.3.4.1 Subtheme 4.1: Inadequate infrastructure

The participants reported that infrastructure was the biggest challenge as they had to progress patients seated on benches due to a lack of space and beds in the labour ward. The participants stated that they had to convert the delivery beds into high-care beds because the high-care patients were very sick. Moreover, most patients admitted to the labour ward high care were supposed to be admitted to adult high care or ICU, but because of a shortage of beds, they had to be kept in the labour ward.

The participants emphasised inadequate infrastructure. According to participants,

> The progress of labour is done while patients are seated on the chairs because there are no beds. I'm willing to use a partogram or prevent or manage PPH, but how is this feasible with a patient on the bench? Like immediately after delivery, the patient must sit on the chair before the fourth stage of labour is monitored because other patients are delivering. (P18, M)
>
> We don't have space to progress patients during labour. (P14, F)
>
> They sit on the benches. We prioritise and give beds to the high risk patient who needs close monitoring, like eclampsia, and some of them are intubated. These high risk patients are supposed to be admitted in adult high care like ICU but there are no beds. (P3, F)

Infrastructure problems and a lack of both human and material resources are the key factors affecting the standard of service in many South African public hospitals. The participants described barriers to the use of maternal guidelines such as inadequate infrastructure, health system failure, and shortage of midwives. In rural Kenya, Lusambili, Wisofschi, Shumba, Obure et al (2020) found that poor infrastructure, understaffing, service users' sociocultural beliefs, and health care workers' attitudes to marginalised women made it difficult to assess and care for pregnant women properly and respectfully.

These findings concur with Tukisi, Temane and Nolte's study (2022:9) on midwives' experiences with obstetric triage and the use of obstetric triage tools during labour in the Bojanala district, North West Province. The study found that midwives were dissatisfied and frustrated with support from management because they did not provide adequate infrastructure, and sufficient materials such as supplies, equipment, and personnel (Tukisi et al 2022:9). A study in Uganda examined health workers' and mothers' views and experiences of the quality of maternity care and the use of informal solutions (Munabi-Babigumira, Glenton, Willcox & Nabudere 2019:1). The study emphasised that knowledge of clinical standards and procedures among health professionals and mothers, promptness, and women's preferences during labour, as well as resources and physical infrastructure were crucial components of high-quality treatment (Munabi-Babigumira et al 2019:1). A study on the difficulties faced by midwives working in remote areas of the Bongo District in Ghana's East region found that women in labour were nursed and delivered on the floor as a result of inadequate infrastructure, such as rooms to accommodate multiple women in labour (Adatara, Amooba, Afaya et al 2020:7).

6.3.4.2 Subtheme 2: Administrative/Healthcare system failure

Administrative/health care system failure emerged as a barrier to effective implementation of the selected guidelines for maternity care. The participants stated that they did follow the guidelines but the health system was another contributory factor to the maternal deaths. The participants indicated inadequate theatre facilities as the main concern that a patient who required theatre, such as a retained placenta, would not get to the theatre on time because of other emergency patients who were in the queue for surgery. According to participants.

We follow the guidelines but other things are beyond our control, like our theatre is a problem because patients wait for long. Patients with retained placenta wait for theatre, sometimes more than 12 hours because the doctor prioritises very sick patients like emergency caesarean section, abruption placenta. (P16, F) PPH, especially from retained placenta and third degree tears, can even wait about 24 hours. (P5, M) The availability of theatre service is not adequate because most of the time the theatre gets blocked from unstable patients. (P2, F)

Africa's healthcare systems face tremendous challenges throughout the six World Health Organisation pillars of providing healthcare due to neglect and underfunding creating unworkable conditions with very poor health outcomes (Oleribe, Momoh, Uzochukwu et al 2019:395). Sustainable Development Goal 3 aims to prevent and reduce avoidable maternal deaths at both national and global level. Despite South Africa's democratic constitution's protection of human rights and access to quality healthcare, there are still challenges to deliver healthcare services (NDOH 2019:11; Thulare, Herselman & Botha 2020:423). Health outcomes are the best indication of the quality of care and the degree to which health services benefit the patient who is the end user. The process that determines the quality of care includes the delivery of care and the patient experience.

A study on the experiences of midwives caring for women in labour in various healthcare settings in Gauteng found that midwives employed in public hospitals were denied independence and believed that hospital administrators prevented them from taking charge and creating change (Hastings-Tolsma, Temane, Tagutanazvo et al 2021:5-6). A shortage of resources, such as equipment and supplies, a shortage of staff, especially medical doctors and midwives, low salaries, a high midwife-to-patient ratio, and an influx of illegal immigrants giving birth in public facilities were among the barriers to implement best intrapartum practices. Midwives in public settings especially were concerned with restricted resource appropriation (Hastings-Tolsma, Temane, Tagutanazvo et al 2021:6).

Quality care is attained when healthcare is safe, accessible, promptly provided, equitable, effective, and patient-centred. Ramavhoya, Maputle and Lebese (2020:157-163) explored the

experiences of midwives managing pregnant women with hypertensive disorders in Limpopo Province, South Africa. The study found that the midwives implemented maternity care guidelines when providing maternal health services, but a lack of human resources combined with inadequate assistance from colleagues in emergencies influenced the effective management of hypertensive diseases in pregnancy. For midwives to execute their duties effectively and efficiently they should be provided with adequate infrastructure and essential medical equipment and supplies needed during childbirth (Ramavhoya, Maputle & Lebese 2020:163). Health services, especially maternal health services, must be available, cost-effective, and of high quality to attain SDG 3: universal health coverage.

6.3.4.3 Subtheme 4.3: Shortage of staff

The participants indicated serious concern about the overwhelmed labour ward. The participants stated that it was difficult to comply with maternal guidelines, due to a shortage of midwives. They delivered about 40 babies per day with three or four midwives usually on the floor.

According to participants,

> For this to work, management must increase staff because 3 or 4 midwives on the floor doesn't work, delivering 40 babies per day. This labour ward needs midwives, not other categories of nurses like enrolled nurse or auxiliary. (P5, M)
>
> There is increased complains from patient and management because of the shortage of midwives, hence most midwives resign from the work over load. (P20, F)
>
> One midwife conducts 1 or 2, sometimes 3, deliveries at a go and you find that the placenta for the first patient is not yet delivered before you could deliver the next patient. (P16, F)
>
> Management should provide staff for effective implementation of the maternity guidelines. Three or four midwives per shift do not work at all. (P10, F)

Health systems around the world are having difficulty recruiting qualified and competent health professionals (Peter, Meier-Kaeppeli, Pehlke-Milde & Grylka-Baeschlin 2021:2). Work-related stress among midwives in 12 public Swiss maternity hospitals was caused mainly by overtime

and work-private life conflict (Peter et al 2021:2). South Africa is one of many nations encountering a crisis related to a shortage of healthcare professionals, especially doctors and midwives in maternity hospitals. Midwives are essential members of the multidisciplinary team who help make sure that women receive high-quality maternity care during the intrapartum period. The outcomes of maternal care are negatively impacted by the shortage of midwives in the public sector. Poor workplace conditions in the healthcare system make it harder for healthcare facilities to achieve their performance goals, deliver quality health care, and recruit, motivate, and retain personnel (Matlala & Lumadi 2019:2).

In 2020, administrative factors, such as a lack of appropriately trained staff due to a doctor and nurse shortage, caused 42% of South African maternal deaths that might have been prevented (NDOH 2020:10).The risks of stillbirth, neonatal death, and maternal death are greatly increased for pregnant women every minute that expert care is delayed (Mlotshwa & Sibiya 2023:1). In their study on the development and prioritization of strategies for improving the implementation of maternal healthcare guidelines in Limpopo province, Ramavhoya, Maputle and Lebese (2022:1) found that factors influencing the provision of maternal healthcare services included human resources, maternal health services, and a knowledge gap. Availability of guidelines was also highlighted as well as community involvement and quality assurance.

A study on midwives' perceptions of the use of obstetric triage and the obstetric triage tool during labour in the Bojanala district showed that midwives regarded the obstetric tool as inadequate and a shortage of staff was a factor in the unbalanced midwife-patient ratio (Tukisi, Temane & Nolte, 2022). The participants were also dissatisfied with lack of management's support for them. Obstetric triage is a comprehensive assessment of expectant mothers during labour that involves a diagnostic and treatment plan for both maternal and foetal health. An examination of the challenges in providing continuous support during childbirth in public hospitals in North West Province showed that the midwives' capacity to provide continuous support was substantially constrained by staff shortages, with one midwife attending to four patients during the active phase of labour (Spencer, du Preez & Minnie 2018:2).

A shortage of midwives affected the ability of health facilities to operate effectively because of work overload (Adatara et al 2020:8). Midwives who worked in the postnatal and antenatal wards of the maternity department in a public hospital in Tshwane District described the labour ward as having a heavier workload than the other maternity wards and consequently did not want to work in the labour ward (Matlala & Lumadi 2019:4).

6.4 CONCLUSION

This chapter discussed the findings from the narrative interviews on the participants' personal and professional experiences of the implementation of the selected guidelines. The majority of participants had positive personal and professional experiences with the implementation of the maternal guidelines to reduce preventable intrapartum maternal deaths, demonstrating the significance that midwives have on the importance of implementation research in healthcare.

The participants emphasised that the selected public intrapartum maternal guidelines were relevant as they were evidence-based, improved their midwifery practice, and improved patient outcomes, including a reduction in preventable intrapartum maternal deaths and safety incidents like stillbirths. The participants indicated that infrastructure challenges, a staffing deficit, and a shortage of equipment were barriers to the efficient implementation of intrapartum maternal guidelines. To enhance evidence-based clinical intervention requires strategies to reduce barriers that hinder the effective and efficient implementation of maternal guidelines. One of the best ways to enhance patient outcomes is to offer evidence-based practice.

The participants' experiences emphasize the need for policymakers and health facility management to support implementation research and address obstacles to the effective implementation of clinical interventions. The results of this study emphasise the need to recognise midwives' perspectives to enhance the standard of care for women during childbirth.

Chapter 7 presents the outcomes of the implementation of the selected maternity care guidelines from the focus group interviews.

CHAPTER 7

PHASE THREE

OUTCOMES OF THE IMPLEMENTATION OF INTRAPARTUM MATERNITY CARE GUIDELINES

FOCUS GROUP INTERVIEWS

7.1 INTRODUCTION

Chapter 6 discussed the results of the narrative interviews on the participants' experiences of the implementation of the selected maternity care guidelines. This chapter discusses the findings of the focus group interviews.

7.2 OVERVIEW OF THE STUDY PHASES

The study consisted of three phases. Phase 1 determined the causes of preventable intrapartum maternal deaths, Phase 2 implemented selected intrapartum maternal guidelines, and Phase 3 focused on the evaluation of the implemented intrapartum maternal deaths. The key elements of health care interventions, such as how an intervention can be effective and how to support it in the best way, can be improved and prioritised by implementation outcomes (Schultes 2023:197). The overall aim of the study was to investigate the causes of preventable intrapartum maternal deaths, implement intrapartum maternal guidelines, and evaluate the outcomes. Figure 7.1 depicts the phases of the study.

This chapter presents the findings from the focus group interviews conducted with the participant midwives on their experiences and the value of the implementation of the selected guidelines.

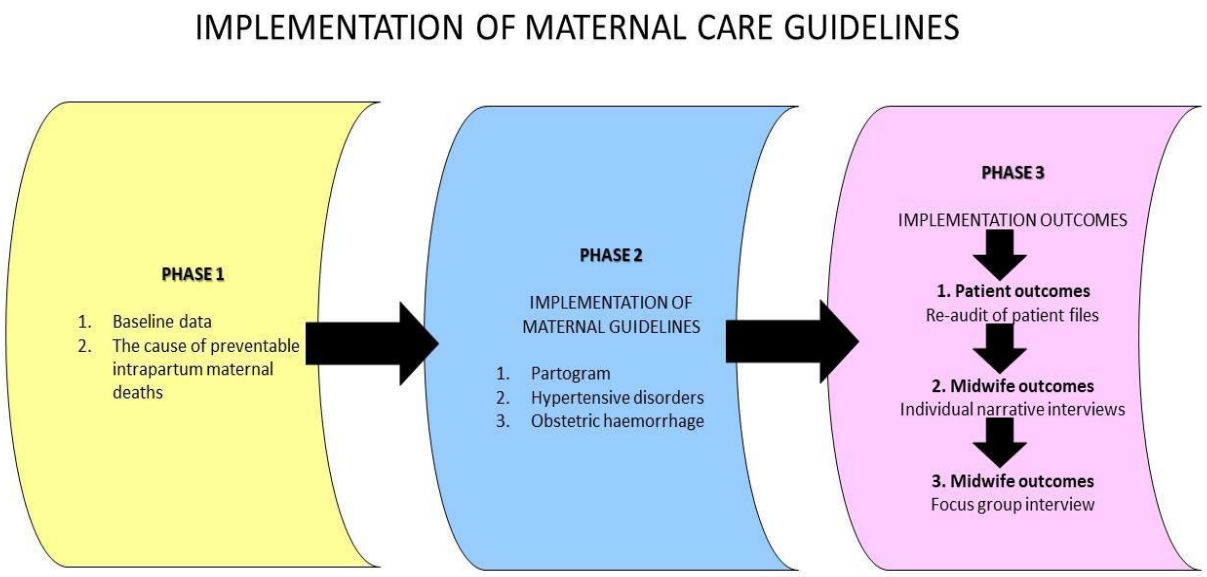

FIGURE 7.1: SUMMARY OF THE THREE PHASES OF THE STUDY

7.3 PHASE 3: REPORT ON THE OUTCOMES OF THE IMPLEMENTED MATERNAL GUIDELINES

This chapter focused on the outcomes of the maternal care guidelines selected during the workshop to implement during the intrapartum period.

The researcher organised the workshop for participant midwives to attend in order to select particular maternal care guidelines for implementation. The researcher adopted a bottom-up approach as a strategy for the selection of the maternal care guidelines and their implementation. The researcher presented the findings of Phase 1 on the causes of preventable intrapartum maternal deaths at the selected public hospital. Phase 1 informed phase 2, where the participant midwives selected three maternal care guidelines to be implemented during the intrapartum period. The three selected guidelines were the use of the partogram during labour, management of hypertensive disorders in pregnancy, labour and puerperium, and management of obstetric haemorrhage, including antepartum and postpartum haemorrhage.

The objective of the outcome phase was:

Objective 3: What are the outcomes of the implemented intrapartum guidelines to reduce preventable maternal deaths at the selected public hospital in Gauteng province?

Following the five-month implementation, the outcome of the implementation of the intrapartum maternal guidelines (Phase 3) was evaluated. Implementation outcomes are the results of purposeful and deliberate measures taken to put innovative treatments, practices, and services into context (Schultes 2023:190). In this study, the goal of the implementation strategy was to make it possible to monitor and evaluate patient outcomes and midwives' outcomes on the implemented maternal care guidelines during the intrapartum period. Patient outcomes were compared to the preventable intrapartum maternal deaths that occurred between February 2023 and June 2023 during the implementation period. The midwives' outcomes, which are the final implementation outcomes, explore key components required for the sustainability of the maternal guidelines during the intrapartum period.

7.3.1 Situational analysis during the implementation phase

This section describes the characteristics and statistics of women, disease profile, and births during the implementation phase. Table 7.1 provides a summary of the women who presented at the selected public hospital in Gauteng Province

Table 7.1Summary of women who presented during the implementation phase

Data elements	February 2023	March 2023	April 2023	May 2023	June 2023	Total
Referral from CHC/C in labour	15	11	14	12	13	**65**
Referral from MOU in labour	300	302	315	314	281	**1512**
Self-referral/home in labour	817	967	1000	1021	909	**4714**
Direct admission into labour	1130	1280	1329	1347	1203	**6289**
Normal vaginal deliveries	690	744	778	830	705	**3747**

Source: The Hospital (2023)

Only women who delivered by normal vaginal delivery were included. According to the study, a total of 6,289 women presented at the selected public hospital between February 2023 and June 2023. Labour was diagnosed in all the women. To diagnose labour, there must be continuous, painful uterine contractions and at least one of the following signs or symptoms: ruptured membranes, a progressive change in cervical effacement and dilatation, or a show (NDOH 2016:40). In the latent phase, the cervix is less than 4 cm dilated and equal to or greater than 1 cm long, whereas in the active phase, the cervix is more than 4 cm dilated or less than 1 cm long (NDOH 2016:41).

Of the patients, 65 were referrals from the Community Care Centre (CHC), 1, 512 were from the local Maternity Obstetric Unit (MOU), and 4,714 were self-referred. Patients who arrived at the facility with a retained placenta were included since they fit the criteria for pregnant women and had not yet completed the third stage of labour. The period following the delivery of the foetus but before the placenta and membranes being evacuated is known as the third stage of labour (NDOH 2016:43). The third stage of labour, despite being the shortest, is the riskiest for maternal morbidity and mortality due to postpartum haemorrhage. There were 3,747 normal vaginal deliveries from February 2023 to June 2023, including breech and assisted deliveries. Table 7.2 presents the disease profile of the women. For the purposes of the study, only the obstetric or medical conditions that were in line with the selected intrapartum maternal guidelines were selected.

Table 7.2 Disease profile of women who presented during labour

Data elements		**February 2023**	**March 2023**	**April 2023**	**May 2023**	**June 2023**	**Total**	
Hypertension	PIH	59	47	31	48	37	**222**	**431**
	Pre-eclampsia	26	16	21	27	29	**119**	
	Eclampsia	9	11	13	16	14	**63**	
	HELLP syndrome	7	5	6	04	5	**27**	
Retained placenta	Incomplete 3rd stage/referral	6	6	8	4	7	**31**	**124 (31 BBA)**
	Retained placenta	23	19	13	17	21	**93**	

Source: The Hospital (2023)

The majority of the 431 patients with pregnancy-related conditions who arrived for labour had hypertensive disorders, according to the study analysis of the disease profiles. Pregnancy-induced hypertension, pre-eclampsia, eclampsia, and Haemolysis, Elevated Liver Enzymes, and Low Platelets (HELLP) syndrome were among the patients' diagnoses. There were 124 patients with retained placenta, 31 of who were referred from community health care centres with incomplete third stages. Thirty-one patients were born before arrival (BBA) with retained placentas.

7.3.2 Evaluation of the implemented intrapartum maternal guidelines

Research has created strategies that accelerate the translation of clinical research into implementation research, with the ultimate goal of cutting the time it takes to produce beneficial public health outcomes. Implementation research studies methods aim to promote the systematic integration of clinical interventions, also known as evidence-based clinical practices, into routine care to improve the quality of health services (Rudd, Davis & Beidas 2020:2). Implementing evidence-based practice (IEBP) is the process of using the most reliable, up-to-date, and relevant research findings, clinical expertise, accepted guidelines, and published literature when making decisions regarding treatment and care (Dagne & Beshah 2021:2).

Midwives play a crucial role in adopting the most recent evidence-based clinical guidelines to provide comprehensive, high-quality care during the antenatal period, intrapartum period, and puerperium. They are often the first healthcare professionals to come into contact with pregnant women during the intrapartum period. The implementation of evidence-based practice (IEBP) gaps must be filled by midwives incorporating the evidence into clinical practice, such as research findings, recently updated expert opinions, accepted guidelines, and books (Dagne & Beshah 2021:2).

The overall aim of the study was to determine the factors that contributed to preventable intrapartum maternal deaths, and to implement and evaluate the outcomes of the implementation phase. The evaluation of the implemented intrapartum maternal guidelines examined patient and nurse outcomes.

7.3.2.1 Patient outcomes

For women of reproductive age, particularly in developing countries, childbirth and its after effects continue to be a leading cause of mortality, illness, and disabilities (WHO 2019:1). At the onset of the study, the researcher and the participant midwives collaboratively agreed that the reduction in the preventable intrapartum maternal deaths at the selected public hospital would be used as a measure to evaluate the effectiveness of the implementation of the maternal guidelines. The problem statement that emerged from the background of the study and literature review was the increased number of preventable maternal deaths. Having noted from the literature reviewed that most maternal deaths occur during the intrapartum period, the study focused on preventable intrapartum maternal deaths.

In low- and middle-income countries, especially in Africa, adverse pregnancy outcomes are the primary causes of maternal and newborn illness and death as well as long-term physical and psychological problems (Tadese, Dagne, Wubetu et al, 2022). Human healthcare has adopted a new approach that aims to maximize patient value while delivering the greatest results at the lowest possible cost. Value-based health care (VBHC), a cutting-edge paradigm now being used in the healthcare industry, seeks to continuously enhance health care through outcomes (Pantaleon 2019:356). The only accurate indicators of quality in value-based care are the best patient outcomes. Patient outcomes are the results of the care and procedures that patients have been given while receiving treatment in a hospital or other clinical setting. To emphasize what is significant to them, patient outcomes address the patient's physical, social, and emotional requirements. According to the WHO (2015), quality of care is the extent to which healthcare services provided to individual and patient populations improve desired outcomes.

The maintenance of the patient's functional status safety and satisfaction or experience of care forms part of the outcomes. According to Pantaleon (2019:356), value-based health care promotes advancement and the acceptance of best practices, further enhancing results. To provide value, it is essential to understand results, and doing so gives a chance to reshape patient care. According to Tadese, Dagne, Wubetu et al (2022:2), adverse pregnancy outcomes include health issues that affect the mother, the baby, or both during pregnancy, during intrapartum and

the postpartum period. In this study, only preventable intrapartum maternal deaths as adverse events were explored. Women die every day as a result of preventable complications during pregnancy, childbirth, or the postpartum period (WHO 2019:3). Maternal mortality is frequently used as a broad measure of a population's general health, the status of women in society, and the efficiency of the healthcare system (Douthard et al, 2021:168)

7.3.2.2 Re-audit of the intrapartum maternal death patients' files

To evaluate the efficiency and effectiveness of the implemented maternity guidelines, the researcher re-audited the patient files of intrapartum maternal deaths at the selected public hospital in Gauteng. The objective was to ascertain the state or maternal mortality ratio of preventable intrapartum maternal deaths as well as whether the maternity guidelines were successfully implemented. Improvements at the provider and health system level as well as the implementation of interventions aimed at removing social and structural barriers are all factors that contribute to success in reducing maternal mortality (World Health Organisation, World Bank, United Nations Population Fund & United Nations Children's Fund, 2015).

Delivering high quality care is a key component of the provision of health services. Quality of care is the extent to which health services improve positive patient and community health outcomes and are compatible with current professional knowledge. There is a commitment to attain universal health coverage by 2030, but it is becoming increasingly clear that securing the cohabitation of infrastructure, medical supplies, and healthcare providers is insufficient to give effective health care. The provision of effective, safe, people-centred care that is timely, equitable, integrated, and efficient, demands conscious attention to the quality of health services (WHO 2018:11). Maternal deaths that occurred during the implementation phase were audited using the same audit tool (PIPP audit tool). Only maternal deaths that had occurred in the labour ward at the selected public hospital were audited. Intrapartum maternal deaths that occurred in other departments of the selected public hospital were excluded. This was because the initial inclusion criteria for the study did not include those departments and the selected maternal care guidelines were not implemented in those departments. Using the PIPP audit tool, the four (4) intrapartum maternal deaths that occurred during the implementation phase were audited. The four (4) maternal deaths that occurred in the labour ward of the selected public hospital were retrospective

and were audited using the PIPP. Two (2) intrapartum maternal deaths were preventable. Table 7.3 summarises the two (2) preventable maternal deaths that occurred during the intrapartum period in the labour ward of the selected public hospital.

Table 7.3 Preventable intrapartum maternal deaths during the implementation phase

Data element	February 2023	April 2023
No of maternal death (MD)	1	1
Age	27	44
Gravity (G)	G2	G6
Parity (P)	P2	P5
Gestational age	39/52 by sure dates and early ultrasound at 19 weeks	41/52 by unsure dates
ANC attendance	Yes	No
Site of delivery	Selected public hospital	Unassisted home birth
Primary causes of death	Pulmonary oedema	Obstetric haemorrhage from retained placenta
Final cause of death	Respiratory failure Multi organ failure with brain death	Hypovolemic shock
Avoidable factors	*Administrative factors* • No accessible ICU bed with ventilator • Insufficient midwives on duty to manage the patient adequately • Personnel not sufficiently trained to manage the patient	*Patient associated factors* • Never initiated antenatal care • Delay seeking medical attention during labour *Administrative factors* • Inadequate theatres available *Medical Personnel Associated* • Management plan inadequate
Preventable MD	Yes	Yes
Total MD	**2**	

Source: The Hospital (2023)

Approximately 810 women died globally each day in2017 from preventable causes associated with pregnancy and childbirth complications, with 94% of the maternal deaths occurring in low- and lower-middle-income countries with the Sub-Saharan region accounting for more than 60% of the global maternal mortality rate (WHO 2019:2). The results of the two audited preventable intrapartum maternal deaths show that despite significant efforts over many years to reform the

healthcare system and raise the standard of care provided to patients, many women continue to experience avoidable harm on a daily basis (Maphumulo, & Bhengu 2019:7). Global targets for ending preventable maternal mortality state that by 2030, every country's maternal mortality ratio (MMR) should have reduced by at least two thirds from its baseline level in 2010 and no country should have an MMR greater than 70 deaths per 100,000 live births (World Bank, United Nations Population Fund, United Nations Children's Fund, World Health Organization 2015:24).

The ability to trust medical services and ensure patient safety is crucial to ensuring both local and global health security, both of which depend on the quality of frontline medical treatment (WHO 2018:5). In addition to preventing suffering and promoting healthier societies, quality health services also support stronger economies and human capital. According to Hlafa, Sibanda and Hompashe (2019:1), health plays a crucial role in sustaining economic growth since it is both a prerequisite for an outcome of economic development. The Millennium Development Goals, in which three of the objectives focus on enhancing health outcomes, serve as an indicator of the significance of health. The Sustainable Development Goals (SDGs) reaffirm a worldwide commitment to achieve universal health coverage by 2030. This means that without encountering financial hardship, all people and communities around the world should have access to the high-quality health care they require for promotion, prevention, cure, healing, rehabilitation, or palliation (WHO 2018:5).

The South African health system encounters several structural and systemic challenges, such as recurrent inefficiencies, shortages of staff, differences in skill sets between rural and urban areas, and substandard patient management (de Villiers 2021:3). Although the South African government has made significant efforts to reform the health system by improving the standard of care, much still needs to be done to rectify the problems with the provision of health services. The analysis of the two maternal fatalities revealed that healthcare system failure from administrative factors contributed to both preventable maternal deaths. Less medical errors, fewer delays in healthcare delivery, and improved effectiveness are all indicators of better care quality. Due to the loss in healthcare quality and rise in litigation brought on by mainly avoidable administrative and medical reasons, public confidence in the South African healthcare system has declined (Maphumulo & Bhengu 2019:7). While acknowledging the significant pressures the system is under, the South African healthcare system is currently working on the challenging

project of developing universal health insurance, which will guarantee its capacity to provide comprehensive quality care that is affordable, accessible, and acceptable to patients and families (de Villiers 2021:19).

Strengthening health systems to address the needs and priorities of women and girls, as well as ensuring accountability to improve quality of care and equity, are among the five objectives of the World Health Organization's strategies towards ending preventable maternal mortality (WHO 2015:25). The essence of excellence must focus on people. To ensure that health services are developed to meet local health needs rather than those of commercial or political interests, people and communities must be involved in their design, delivery, and ongoing evaluation (WHO 2018:5).

7.4.3 Outcomes of the selected Maternal Care Guidelines

The findings indicate that the selected public hospital had significantly reduced the number of preventable intrapartum maternal deaths. In addition, the study found a notable decline in the incidence of hypertensive diseases and obstetric haemorrhage as causes of preventable intrapartum maternal fatalities. During the five-month implementation period, there were two preventable intrapartum maternal fatalities: one attributable to hypertension, and the other to a retained placenta. In terms of avoidable factors, the partogram did not account for any of the four maternal deaths, which indicates that their implementation of the selected maternity care guidelines in the labour ward brought about a remarkable improvement in terms of the provision of maternal health care services during the intrapartum period. Figure 7.2 presents a summary of the pre- and post-implementation of the selected maternal care guidelines.

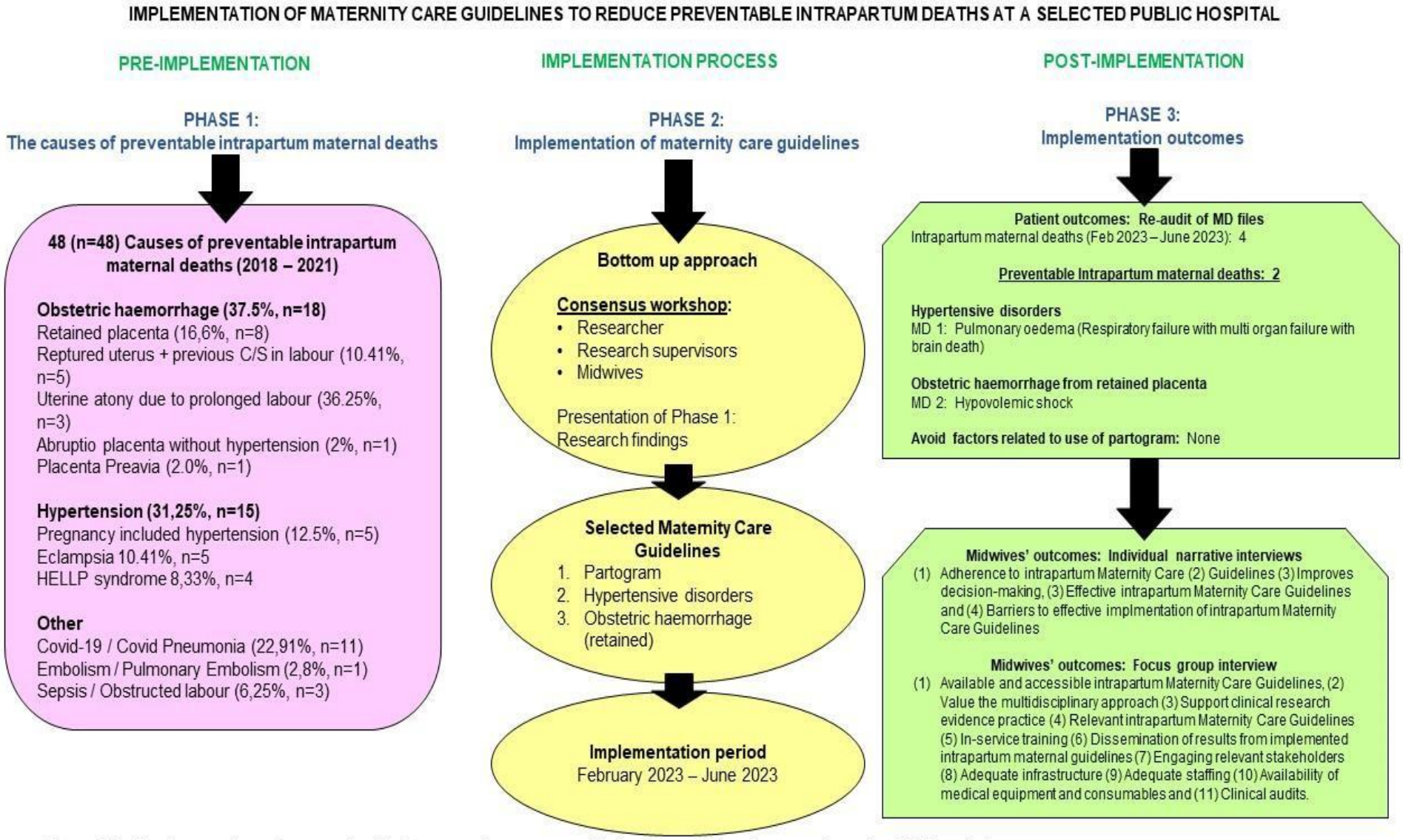

Figure 7.2: Implementation of maternal guidelines to reduce preventable intrapartum deaths at a selected public hospital

7.4.3.1 Participants' outcomes

The participants' outcomes were the final evaluation of the maternal care guidelines that had been put into place throughout the intrapartum period. Using Proctor, Silmere, Raghavan et al's (2011:66–71) elements, the researcher and the participants evaluated the selected maternal guidelines (use of the partogram, management of hypertensive disorders, and management of obstetric haemorrhage from retained placenta).

The researcher visited the labour ward at the selected public hospital in July 2023 to discuss the evaluation phase with the participant midwives. The purpose of the visit was to decide on an appropriate time and date for the focus group interviews with the midwives.

There were four shifts in the labour wards, two shifts each day and two shifts at night. Since there were four shifts, the midwives suggested conducting four focus group interviews. The researcher agreed and dates were established for the focus group interviews to evaluate the outcomes of the implemented intrapartum guidelines to reduce preventable intrapartum maternal deaths. The focus group interviews took place between 14 July 2023 and 21 July 2023. Table 7.4 lists the colours and dates assigned to the focus group interviews. The focus groups included day shift workers in the morning and night shift workers in the evening. A semi-structured interview was conducted in the tea room of the selected public hospital. Since the interviews took place within a noisy delivery area (labour ward), where women were giving birth, these interviews were not conducted formally. Nevertheless, the focus group interviews were audio-recorded and field notes taken throughout the sessions. The interviews lasted approximately 30 to 40 minutes with each group of midwives.

Table 7.4 Colours and dates assigned to participants in the focus group interviews

FOCUS GROUP INTERVIEWS				FIELD NOTES
14/07/2023	**17/07/2023**	**19/07/2023**	**21/07/2023**	
Yellow Team	**Blue Team**	**Orange Team**	**Green Team**	**Researcher**
Group 1 4 Participants Shift 1 (day) Duration: 40 minutes	Group 2 6 Participants Shift 2 (day) Duration: 30 minutes	Group 3 7 Participants Shift 3 (night) Duration: 35 minutes	Group 4 6 Participants Shift 2 (night) Duration: minutes.	The researcher took written field notes during all the focus group interviews.
Number of midwives per shift				
07	09	10	09	

The focus group discussions wished to evaluate the important factors for effective implementation and sustainability of the selected maternal care guidelines at the selected public hospital to reduce preventable intrapartum maternal deaths. The researcher used Proctor, Silmere, Raghavan et al's (2011:66-71) eight taxonomies/outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda for the focus group discussions. This study was implementation research and the researcher considered Proctor et al's taxonomies/implementation outcomes appropriate to address and ensure the effectiveness and sustainability of the selected maternal care guidelines at the selected public hospital.

Figure 7.3 Depicts the questions asked during the focus group interviews to evaluate the outcomes of the selected intrapartum maternal guidelines implemented to reduce preventable maternal deaths.

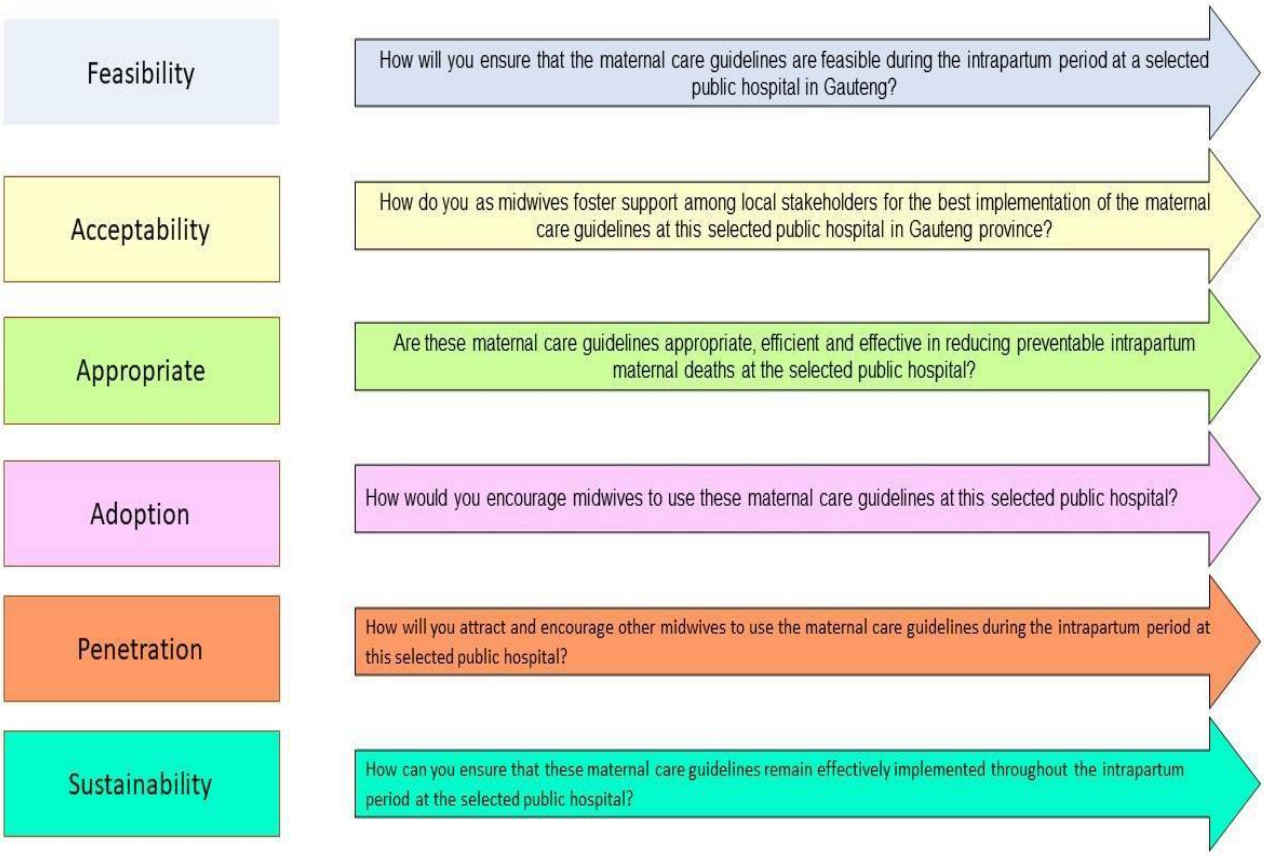

FIGURE 7.3: FOCUS GROUP INTERVIEW QUESTIONS

Adapted from: Proctor, Silmere, Raghavan et al (2011:66-71)

The researcher coded the interview data in collaboration with the research supervisors. Table 7.5 summarises the data collected from the interviews with the participant midwives at the selected public hospital.

Table 7.5 Questions and related themes from the focus group interviews

QUESTIONS	THEMES
Feasibility: How will you ensure that the intrapartum maternal guidelines are feasible at this selected public hospital in Gauteng?	Theme 1: Available and accessible intrapartum maternal care guidelines Theme 2: Value the multidisciplinary approach
Acceptability: How do you as midwives foster support among local stakeholders for the best implementation of intrapartum maternal guidelines at this selected public hospital in Gauteng province?	Theme 3: Support clinical research evidence-based practice
Appropriateness: Are these intrapartum care guidelines appropriate, efficient, and effective in reducing preventable intrapartum maternal deaths?	Theme 4: Relevant intrapartum maternal care guidelines
Adoption: How would you encourage midwives to use the intrapartum care guidelines at this selected public hospital?	Theme 5: In-service training
Penetration: How can you attract other midwives to adopt the intrapartum maternal guidelines in the prevention of preventable intrapartum maternal deaths?	Theme 6: Dissemination of results from implemented intrapartum maternal guidelines Theme 7: Engaging relevant stakeholders
Sustainability: How can you ensure that these intrapartum care guidelines remain effectively implemented throughout the intrapartum period?	Theme 8: Adequate infrastructure Theme 9: Adequate staffing Theme 10: Availability of medical equipment and consumables Theme 11: Clinical audits

Strategies or procedures used to improve the adoption, implementation, and sustainability of evidence-based interventions in particular settings are referred to as "implementation research" (Pearson, Naylor, Ashe et al 2020:1; Leeman, Birken, Powell et al 2017:1). Leeman, Birken, Powell et al (2017:3) describe evidence-based interventions (EBIs) as any activity or series of activities that delivery systems implement to enhance health behaviours, health outcomes, or environments relevant to health. Implementation research is a purposeful strategy to ensure that a recommendation from a guideline is followed in clinical practice. In this study, the intrapartum maternal guidelines were adopted from the South African Guidelines for Maternity Care of the National Department of Health (NDOH, 2016).

7.4.4 Feasibility

Question 1 *Feasibility*: How will you ensure that the intrapartum maternal guidelines are feasible at this selected public hospital in Gauteng?

Two themes emerged from the question: Available and accessible intrapartum maternal guidelines and Value the multidisciplinary approach.

Feasibility refers to the most effective and easiest way to implement an intervention during the everyday operation of an intervention (Travers, Romero-Ortuno & Cooney 2022:3; Schultes 2023:191). This question wished to ascertain how the participant midwives at this particular public hospital could conveniently or practically implement the intrapartum maternal recommendations to reduce preventable maternal deaths.

- **Theme 1: Available and accessible intrapartum maternal care guidelines**

The participants stressed the need to have readily available intrapartum maternal guidelines, such as those found in manuals or posted on notice boards in the labour and delivery ward. According to the participants, the national Maternal Guidelines in South Africa are not acceptable at the moment because doctors also follow their own protocols. Most of the participants agreed that there should be one established protocol followed by both doctors and midwives in the labour ward. According to participants,

Group 1 (yellow team):
Ensure that maternal care guidelines are available and accessible to everyone in the unit and they must be displayed where everyone will have access to them, such as on the notice boards, and they must also be communicated.

Group 2 (blue team):
Firstly, maternal guidelines must be available. We cannot be using something that we don't have. Secondly, we need to have them posted on the notice boards and so that nurses are well informed.

Group 4 (green team):
Putting our maternal care guidelines on the notice board so that everyone can see them, the doctors and the nurses, especially new staff, so they are informed.

The national maternal care guidelines are intended for community health care centres or clinics, district hospitals, at provincial and institutional levels, and recommend and suggest that facilities develop clinical protocols (NDOH 2016:10).

Nurses and doctors in South Africa are required to be familiar with the fundamentals outlined in the national guidelines which are intended to reduce high rates of maternal and perinatal morbidity and mortality and enhance the standard of care for women, their unborn children, and their families.

- **Theme 2: Value the multidisciplinary approach**

The second theme was the value of the multidisciplinary approach. A multidisciplinary team is a group of specialists who work together to treat patients, with the main objective of increasing patient care and treatment effectiveness (Taberna, Gil Moncayo, Jané-Salas et al 2020:2). The multidisciplinary team, which includes nurses, dieticians, medical doctors, and administrators, collaborates to deliver high-quality treatment and coordinated patient care in a healthcare organization. Contrary to the treatment and care provided by a single doctor or midwife, combining the efforts of various professionals is intended to improve patient management. In the labour ward, the multidisciplinary team consists of midwives and doctors who collaboratively provide comprehensive care to women during childbirth.

The participants expressed concern about the necessity for doctors to recognize the value of midwives' work. Midwives are independent healthcare professionals who should provide comprehensive treatment and care to the woman during her pregnancy, labour, and puerperium. It is the responsibility of the midwife to protect the woman and always advocate for her when the need arises. The participants indicated that some clinicians did not provide treatment in accordance with intrapartum maternal recommendations, despite being informed and required to do so. Patient advocacy and their contribution to the woman’s care were not valued. According to participants.

Group 1 (yellow team):
They must value the multidisciplinary approach such as doctors and nurses and everyone that is in contact with the patient. The guidelines must be understood by all the multidisciplinary team working in the labour ward so they can be adhered to at the end of the day. We need to have guidelines that speak to the midwives and the doctors.

Group 2 (blue team):
We do not work alone as nurses. Doctors also need to be part of it so we all reach the same goal at the end of the day.

Group 3 (orange team):
We need to work as a team, we mean both the midwives and doctors. We all have care for the pregnant woman to achieve common goal which is to provide quality maternity care,

Group 4 (green team):
Because we currently do not have any clinical protocols and make use of maternal guidelines. In that case, we must also encourage both nurses and doctors to use them because we are a team that cares for one patient. Doctors will assess the patient and wait for the midwife to fill in the partogram.

The multidisciplinary approach is crucial in the healthcare industry. Over time the solo practitioner model of healthcare delivery was replaced by complex networks of health professionals (Dinh, Traylor, Kilcullen et al 2020:125). Collaboration across the multidisciplinary team, including medical doctors and midwives, is recognised as a critical component of the best intrapartum care. Being a part of a multidisciplinary team enables every healthcare professional to treat the patient as a whole and provide complete care. Each healthcare professional can engage with the patient in their specific field of expertise while also collaborating to offer suggestions that collectively improve patient outcomes. A multidisciplinary approach offers the chance to improve teamwork and patient care by fostering more effective communication (Dinh, Traylor, Kilcullen et al 2020:125).

Medical teamwork has attracted a lot of interest as healthcare delivery shifts toward more sophisticated, team-based systems (Dinh, Traylor, Kilcullen et al 2020:125). The labour wards in South Africa, including at the selected public hospital, have medical doctors and midwives who collaborate on the assessment, diagnosis, and planning of a woman in labour. In their study in South-West Nigeria, Ige and Cele (2022:5) found that professional teamwork was lacking between midwives and doctors. In this study, the participants stated that doctors frequently disregarded their knowledge and contributions towards patient care, even though midwives should report to superior staff to ensure patients benefit as much as possible. At the same time some participants reported that doctors often placed the blame for mistakes in patient management that resulted in poor obstetric outcomes on midwives.

7.4.5 Acceptability

Question 2 *Acceptability*: How will you foster support among local stakeholders for the best implementation of intrapartum maternal guidelines at this selected public hospital in Gauteng province?

One theme emerged from this question: create a culture that supports clinical evidence-based practice.

Acceptability refers to the level of satisfaction and approval of an intervention's content and organization among its implementers (Schultes 2023:191). In their review, Sekhon, Cartwright and Francis (2017:2) found that when practitioners followed the implementation of guidelines, the clinical intervention was deemed acceptable. Compliance with intrapartum maternal guidelines would result in better clinical outcomes and a reduction in preventable maternal deaths. Accordingly, acceptability should be considered when developing, evaluating, and putting into practice healthcare interventions. Acceptability is a measure of implementation outcomes, which is considered a leading indicator of implementation success.

- **Theme 3: Support clinical research evidence-based practice**

One theme emerged in fostering support for the implementation of the guidelines, namely support clinical research evidence-based practice. The participants stated that the acceptability of intrapartum maternal guidelines requires the creation of an environment that supports clinical research evidence-based practice. According to participants,

Group 1 (yellow team):
We need to support clinical research practice, like evidence-based. Tell staff that these guidelines have been researched before and they are not only used in this hospital's labour ward, they are being used all over the health care systems and have helped prevent maternal deaths.

Group 2 (blue team):
As midwives working in the labour ward, we must understand and own the maternal guidelines and take responsibility to orientate new staff'.

Group 3 (orange team):
The guidelines are nationally recognised, therefore both midwives and doctors must be orientated, trained about these maternal care guidelines and clinical mangers to ensure adherence to the maternal guidelines.

Group 4 (green team):
These maternal guidelines are clinical research evidence as most are derived from the WHO, which is not something new. Staff need to be trained on maternal guidelines, especially new staff such as students, midwives, doctors, and community service practitioners so they know what to do when the need arises.

The participants acknowledged that there was opposition during the beginning of the implementation phase. The participants indicated that some other members of staff stated that the purpose of having this research conducted in the labour unit was to delay and interfere with patient care. Some participants stated that they were already overwhelmed and felt that adding this study to their already burdened situation would only make matters worse due to the lack of staff, particularly midwives.

7.4.6 Appropriateness

Question 3 *Appropriateness:* Are these intrapartum care guidelines appropriate, efficient, and effective in reducing preventable intrapartum maternal deaths?

One theme emerged from this question: Relevant intrapartum maternal guidelines.

Appropriateness refers to the perceived compatibility of an intervention with a particular setting or stakeholder (Schultes, 2023). The participants agreed on the implementation of the selected intrapartum maternal guidelines. After the implementation period it was important to check whether the selected intrapartum maternal guidelines were appropriate for the situation and context.

- **Theme 4: Relevant intrapartum maternal care guidelines**

Adherence to clinical practice guidelines in eight low- and middle-income countries was below 50% in several instances, resulting in low-quality antenatal and child care and deficient family planning (World Health Organization, World Bank, United Nations Population Fund & United Nations Children's Fund, 2015). In this study, the participants found the implementation of the selected maternal care guidelines effective. According to participants,

Group 1 (yellow team):
We agree that the maternal guidelines introduced to the labour ward are appropriate and relevant to the current situation. Preventable maternal deaths have decreased since the introduction of this study. Between February 2023 and June 2023, we only had two preventable intrapartum maternal deaths, which is uncommon in a period like this.

Group 2 (blue team):
The maternal guidelines are very appropriate because since they were introduced, the maternal deaths have reduced from about 6 maternal deaths per month to only 2 preventable intrapartum maternal deaths for a 5-month period.

Group 4 (green team):
The maternal guidelines are appropriate and efficient in reducing maternal deaths. When we look at the statistics, we only had two maternal deaths since we introduced the study, which was related to lack of resources or administrative challenges.
Since this study we have been encouraging doctors to plot the partogram, showing an improvement.

Group 3 (orange team):
Hypertensive patients are well managed like when to load with magnesium sulphate and when not and the partogram is filled and plotted unlike before.

7.4.7 Adoption

Question 4 *Adoption:* How will you encourage midwives to use the intrapartum care guidelines at this selected public hospital?

One theme emerged from this question: Awareness about the use of evidence-based midwifery practice and in-service training.

Testing the influence of implementation strategies or interventions on the adoption, integration, or uptake of an evidence-based intervention within organizations or contexts is the goal of implementation trials (Pearson, Naylor, Ashe et al 2020:1). The use or intake of an intervention by an organization is referred to as adoption (Schultes 2023:191). In this study, adoption meant that the participants might positively inspire and motivate other midwives to start implementing the selected intrapartum maternal guidelines in practice. Midwives must embrace the intervention after a successful clinical trial that produced the best patient outcomes to retain and sustain the intervention. Travers, Romero-Ortun and Cooney (2022:3) emphasise that adoption improves the level of adherence to an intervention.

- **Theme 5 Awareness and in-service training**

The participants indicated raising awareness of evidence-based midwifery practice and in-service training to encourage midwives to use the intrapartum care guidelines. The participants stressed the need for midwives to undergo training, especially in the management of obstetric emergencies. Some participants suggested doctors should be part of the in-service training as they co-managed the patient. According to participants,

Group 1 (yellow team):
There must be continuous in-service training and reminding each other about the intrapartum maternal guideline. Doctors must be included because since this study we have been encouraging doctors to plot the partogram and there is an improvement.

Group 2 (blue team):
Staff must go for training because we are no longer having the formal scheduled in-service training from the hospital staff skill development.

Group 3 (orange team):
The guidelines are nationally recognised, therefore both midwives and doctors must be orientated, trained about these maternal care guidelines and clinical mangers to ensure adherence to the maternal guidelines.

Group 4 (green team):
We have to conduct regular in-service training. This must also include other departments like causality, intensive care units, and medical wards as some maternity patients are admitted in those units and the staff is not familiar with the intrapartum maternal guidelines.

Treatment delivered by qualified health professionals who are knowledgeable and competent in sexual and reproductive health care can save the lives of mothers and newborns before, during, and after childbirth (WHO 2019:3).

7.4.8 Penetration

Question 5 *Penetration:* How can you attract other midwives to adopt the intrapartum maternal guidelines in the prevention of preventable intrapartum maternal deaths?

Penetration refers to the rate at which participants execute an intervention within a service setting (Schultes 2023:191). One theme emerged from this question: dissemination of results from the implemented intrapartum maternal guidelines.

- **Theme 6: Dissemination of results of implemented intrapartum maternal guidelines**

The participants indicated that the results of the implementation of the selected guidelines should be disseminated to encourage application. According to the participants, one strategy to increase penetration is information sharing among midwives and other health professionals like doctors. Dissemination is specific transmission of information and intervention materials to a certain public health or clinical practice audience. Any action that aims to raise the awareness, knowledge, attitudes, and intention to adopt an EBI among public health and healthcare decision-makers, clinicians, and other professionals is considered a dissemination strategy (Leeman, Birken, Powell et al 2017:5–6).

The participants also expressed their concern about not being invited to the maternal morbidity and mortality (M&M) meetings. The participants were convinced that meetings of such a nature could encourage the implementation of intrapartum maternal guidelines. Moreover, the participants stressed that midwives ought to be included in the multidisciplinary team and be invited to the M&M meetings. Additionally, such participation might increase the uptake of the implementation of intrapartum maternal guidelines. According to participants,

Group 2 (blue team):
Managers should invite and encourage midwives to attend maternal and mortality (M&M) meetings because that is where maternal deaths are comprehensively discussed.

Group 3 (orange team):
Create awareness about the use of evidence-based practices through in-service and frequently allowing midwives to attend (M&M) meetings".

Group 4 (green team):
Other departments must be invited to the M&M as they also care for maternity patients. Staff in those departments, like casualty and ICU, are not aware of the changes made in the new maternal guidelines and this is evidenced by patients being sent around the hospital because they cannot manage the patients.

According to the participants, discussing the causes of maternal deaths and their causes**? or do you mean: discussing maternal deaths and their causes?** could raise awareness of these

deaths, especially preventable maternal fatalities, which may improve adherence to intrapartum maternal guidelines and protocols. The Confidential Enquiry into Maternal Deaths (CEMED) involves multiple specialists, including the obstetrician and midwife specialists who analyse each probable case of maternal mortality in depth, evaluating the accuracy of the classifications used as well as looking into the circumstances surrounding the death (WHO 2015:22). Additionally, the CEMED assists in locating areas where intervention is required to end a pattern of avoidable maternal deaths through engagement and the development of quality improvement strategies.

- **Theme 7: Engaging relevant stakeholders**

Engagement with relevant stakeholders emerged as the seventh theme in how midwives could attract other midwives to adopt and continually use the selected intrapartum maternal guidelines in the prevention of preventable intrapartum maternal deaths.

The participants indicated the need for certain hospital departments, such as the accident and emergency or casualty department, medical wards, and intensive care units (ICU), to be informed of the intrapartum maternal guidelines. The participants stated that some patients, particularly ones with non-viable pregnancies, present in causality and are sent to the intensive care unit (ICU) where they need more specialized care because of their life-threatening circumstances. The participants acknowledged that some women give birth while being treated in such departments and subsequently die, and it was only at the M&M meeting that it was acknowledged that certain intrapartum maternal guidelines and protocols were not followed. To prevent harm from being done to the patient, it is therefore necessary to engage with these departments.

At the level of the healthcare facility, the Maternal Death Surveillance and Response (MDSR) encourages a continuous cycle of action for monitoring maternal deaths, detecting patterns in and factors contributing to mortality, and taking measures to prevent future deaths (World Health Organization, World Bank, United Nations Population Fund & United Nations Children's Fund 2015:22).

Group 1 (yellow team):
The maternity department should invite other departments, such as theatre, accident and emergency, and intensive care, in the maternal and mortality meeting so that they can familiarise themselves with the causes of preventable deaths and the intrapartum guidelines.

Group 2 (blue team):
Patients booked for emergency caesarean section do deliver in theatre and a midwife is always required to conduct the delivery and most of the time you find the baby is already out and the placenta is not delivered and such cases lead to the retained placenta and PPH.

Group 3 (orange team):
Implementation of maternity care guidelines should be a multidisciplinary effort, including midwives and doctors.

Group 4 (green team):
We have to conduct regular in-service training. This must also include other departments like causality, intensive care units, and medical wards as some maternity patients are admitted in those units because the staff is not familiar with the maternal guidelines.

7.4.9 Question 6

Question 6 *Sustainability:* How can you ensure that these intrapartum care guidelines remain effectively implemented throughout the intrapartum period?

Four themes emerged from this question, namely: adequate infrastructure, adequate staffing, and availability of medical equipment and consumable and clinical audits
Schultes (2023:191) defines sustainability as the extent to which an intervention is institutionalized within an organization. The community is not able to benefit from the community's investment in such research because effective clinical interventions aimed at improving population and patient outcomes are not implemented in policy and regular health service practice (Pearson, Naylor, Ashe et al 2020:1). To provide and maintain health care interventions that will improve healthcare, sustainability is important. Since the background of the study revealed that there were existing intrapartum maternal guidelines, it was vital to question the participants on how they could make sure that the implemented intrapartum guidelines would remain effective.

- **Theme 8: Adequate infrastructure**

Infrastructure emerged as the eighth theme from the question: How can you ensure that these intrapartum care guidelines remain effectively implemented throughout the intrapartum period? The participants revealed that proper implementation of intrapartum maternal guidelines also requires an adequate infrastructure. Although the National Department of Health has implemented policies, strategies, and plans to improve service delivery and boost the

performance of the public health system, there are still many health systems challenges (Malakoane, Heunis, Chikobvu et al, 2020; Maphumulo & Bhengu, 2019). According to participants.

Group 1 (yellow team):
The infrastructure is very small, like labour ward admission has 4 beds and makes it difficult to plot the partogram especially since it is always overcrowded. You can't focus on one patient and complete the records because there are always patients waiting for a midwife.

Group 2 (blue team):
The infrastructure must be improved. Most of the patients in labour sit on the benches due to shortage of beds, making it difficult to run the CTGs.

Group 4 (green team):
The infrastructure is not adequate to be able to render the number of patients that are admitted in the labour ward. There is a high care area right inside the labour ward. This means few delivery beds and it is always full, hence patients deliver on the floor. When a complication arises, it is very difficult for doctors and midwives to manage the patient.

The majority of the patients were seated on chairs or benches while in the active phase of labour, which the participants said made it difficult to implement these intrapartum maternal guidelines. The majority of intrapartum care and procedures call for the patient to be on the bed, hence the participants emphasised that patients should be nursed on a bed. The participants indicated that they were familiar with the intrapartum maternal guidelines but found it very challenging to put into practice. The participants acknowledged that some women in labour were given beds when deliveries were imminent. These findings concur with Malakoane, Heunis, Chikobvu et al's (2020:9) study on the problems facing the public health system in the Free State, South Africa, which found that the majority of medical facilities had an infrastructure that was too old or inadequate to accommodate high patient volumes, causing many patients to be sent home without receiving care. Maphumulo and Bhengu (2019:1) found that multiple problems that have a detrimental impact on healthcare quality have impacted the standard of care in South Africa.

- **Theme 9: Adequate staffing**

The ninth theme was adequate staffing. The participants stressed that a shortage of staff was a hindrance to the effective implementation of intrapartum maternal guidelines. Only health professionals can run health systems, and having staff that is both purpose-driven and practice-ready is essential to improve health service coverage and health outcomes (WHO 2016:8). Adequate staffing is essential for delivering high-quality care, enhancing population health,

providing universal access to care, and achieving the Sustainable Development Goals (WHO

2021:7). In their review on the challenges of quality improvement in the healthcare of South Africa after apartheid, Maphumulo and Bhengu (2019:9) found a shortage of healthcare workers due to inadequate production, poor recruitment, poor retention, and staff mismanagement. Efforts to improve the distribution, accessibility, performance, and productivity of health workers should go hand in hand with increasing their availability (WHO 2016:7). In this study, the participants worked in a busy maternity ward and indicated that they were generally understaffed. According to participants,

Group 1 (yellow team):
The labour ward is understaffed, making it difficult to adhere and reach the intrapartum maternal guidelines goals, worse it's been a long-standing problem and nothing is being done, especially with high staff turnover because of an overwhelmed labour ward.

Group 2 (blue team):
The labour ward is understaffed, we need more staff. The midwife ratio is the biggest challenge, making it difficult to adhere to and reach the intrapartum maternal guidelines goals such as plotting the partogram and multiple deliveries which are contributors to retained placenta.

Group 3 (orange team):
The hospital management must do something about the shortage of staff. We are seriously understaffed, both doctors and midwives.

Group 4 (green team):
Labour ward needs adequate staffing to maintain the maternal guidelines. I'm referring to 24-hour statistics where 8 midwives, 4-day shift and 4-night shift, conduct 35 to 40 normal vaginal deliveries. Doctors' allocation doesn't balance. The doctor is sometimes not available for APH, or PPH patients who require sonar scans. Sometimes is an intern who is available but still needs to wait for a senior doctor who is busy in another ward.

The findings of this study concur with Ebi, Hirko and Mijena's (2019) results in public hospitals in Wollega, Ethiopia, that the main obstacles to providing quality healthcare services were a lack of workers and a tremendous workload. According to the WHO (2016:1), achieving universal health coverage and sustainable development goals requires a strong health workforce of competent, fairly distributed, and motivated health professionals. Despite persistent efforts at regional and international levels to improve the health workforce, there are still considerable obstacles, particularly in the African Region. The African Region has the highest burden of disease and the greatest shortfall of health professionals (WHO 2021:7).

Globally, there is a needs-based shortage of approximately 17.4 million healthcare professionals, of whom almost 2.6 million are doctors, about 9 million are nurses and midwives, and the

remaining consist of all other health worker cadres (WHO 2016:6). In a study on the key challenges affecting African healthcare systems, Oleribe, Momoh, Uzochukwu et al (2019:399) found that the first three issues were inadequate human resources (34.29%), a lack of funding for health (30%), and poor leadership and management (8.45%). In this study, the participants reported that the labour ward always had insufficient resources and was mostly overcrowded. The participants indicated that they did about 20 normal vaginal deliveries (NVD) during a 12-hour shift with just 4 midwives. The participants stressed that the workload was too intense for the workforce because there were often two midwives working each shift in both first-stage and second-stage labour rooms.

The shortage of healthcare professionals has impacted the universal health coverage and SDG progress, as well as the provision and standard of basic health care (WHO 2021:6). In their study on the problems affecting the public health system in the Free State, Malakoane, Heunis, Chikobvu et al (2020:11) found that inadequate leadership and governance negatively impacted the provision of healthcare services. According to the WHO (2021:10), an adequate number of staff members who are knowledgeable, responsive, motivated, productive, and fairly dispersed across the workforce are essential for effective health systems.

- **Theme 10: Availability of medical equipment and consumables**

The tenth theme was the availability of medical equipment and consumables. The participants emphasised the availability of medical equipment and consumables to ensure that the selected intrapartum care guidelines remain effectively implemented throughout the intrapartum period. Healthcare professionals should be provided with medical equipment to be able to provide care. According to participants,

Group 1 (yellow team):
There is limited medical equipment like cardiotograph machines (CTG), foetal, toco transducer and belts.

Group 2 (blue team):
We need medical equipment so we can implement the intrapartum guidelines. We don't have some of the medications to use during emergencies such as *Labetalol*.

Group 3 (orange team):
We need equipments such as cardiotograph machines (CTG). Most of the time we deliver women without delivery packs.

Group 4 (green team):
The labour ward needs equipment, especially the labour ward high care area. We don't have enough delivery packs, infusion pumps, and the wall suction apparatus are sometimes not working and during an emergency.

These findings concur with Ige and Cele's (2022:3) findings on the challenges midwives in South-West Nigeria face in providing respectful maternity care during childbirth. The results showed that the health facilities were unable to function effectively due to a lack of necessary resources or supplies and commodities, including delivery packs, disinfectants, sanitizers, gloves, and sutures. The study's findings concur with those of Sumankuuro, Crockett and Wang (2018:6-7) on perceived barriers to providing maternity and newborn healthcare in low- and middle-income environments. The study findings revealed that inadequate medical supplies and access to essential medications were cited by community members and healthcare professionals as obstacles to providing appropriate care.

- **Theme 11: Clinical audits**

Clinical audits emerged as the eleventh theme in ensuring the sustainability of the intrapartum maternal guidelines. Healthcare facilities strive to address inequalities in patient treatment, care, and outcomes. Audits in health care involve comparing performance to clear standards and presenting data to inform improvement (Willis, Wood, Brehaut et al 2022:3). The participants emphasised that it is crucial that clinical records, such as the partogram, be continuously audited against the established target criteria. The participants indicated that they had a difficult time complying with the use of the partogram. Some participants stated that medical doctors diagnosed labour but did not plot the findings on the partogram. A partogram is a graph that is used to assess and record the well-being of the mother, the well-being of the foetus, and the progress of labour. Information like cervical dilation, foetal heart rate, labour time, and vital signs are examples of indicators that may be important to record on the partogram. Audit and feedback aim to enhance patient care by comparing clinical performance to stated criteria and focusing on areas where those standards are not met (Foy, Skrypak, Alderson et al 2020:1). According to participants,

Group 1 (yellow team):
Ongoing in-service training and re-evaluating of the guidelines are working.

Group 2 (blue team):
File auditing to evaluate if the midwives are meeting and providing care as per standard operating procedure and intrapartum guidelines.

Group 3 (orange team):
Currently only midwives do clinical auditing of patients. Doctors must also conduct clinical audit files to identify gaps, so quality improvement plans can be drawn to improve patient care

Group 4 (green team):
We need to conduct clinical audits to measure our performance and also to identify gaps so we can construct quality improvement plans to improve the quality of care expected to be rendered to women during labour.

In daily clinical practice, it is vital to assess and enhance the quality of the treatment given to patients. To determine the modifications required to improve the level of care, clinical audits compare a clinical outcome to established standards or expectations based on the principles of evidence-based healthcare. According to Foy, Skrypak, Alderson et al (2020:1), the use of implementation science, considering the needs of patients and healthcare professionals, and prioritising intervention over measurement, could maximise the beneficial effects of clinical audit.

Hypoxia-related neonatal fatalities, intrapartum stillbirths, and maternal deaths could all be substantially reduced with prompt identification and treatment of intrapartum problems. Utilizing the partogram to monitor the progress of labour is a high-priority intervention for identifying abnormalities of the mother, foetus, and the progress of labour (Sanghvi, Mohan, Litwin et al 2019:521). The audit and feedback process includes cycles of creating best practice standards, assessing current practices, reporting findings, implementing modifications, and continuing monitoring (Foy, Skrypak, Alderson et al, 2020). Best practices during the intrapartum period can be attained through good clinical governance, effective management, and continuous supervision, auditing, monitoring, and evaluation (Malesela 2016:281).

7.5 CONCLUSION

This chapter discussed the findings of the focus group interviews on the important factors to sustain the implementation of the selected intrapartum maternal guidelines at the selected public hospital. The participants were aware of the maternal guidelines to be implemented during the

intrapartum period and the obstacles to their effective implementation. Healthcare systems, especially healthcare facilities need to focus on the elements required to provide the best intrapartum care, such as appropriate infrastructure, adequate staffing, and the availability and accessibility of medical equipment and supplies.

As midwives and doctors co-manage the patient, these findings should assist policymakers, clinical and nursing managers, and health care professionals working in maternity departments or labour wards to value the principles of a multidisciplinary approach. The participants stressed that midwives and doctors should receive in-service training and be invited to the maternal mortality meetings as well as other departments that admit maternity patients.

Chapter 8 concludes the study, briefly describes the strengths, limitations and implications, and makes recommendations.

CHAPTER 8

CONCLUSION, STRENGTHS, LIMITATIONS AND RECOMMENDATIONS

8.1 INTRODUCTION

Chapter 7 discussed the outcomes of the implementation of the intrapartum maternal recommendations (Phase 3). This chapter concludes the study and briefly describes its contribution/strengths, limitations, and recommendations.

8.2 AIM OF THE STUDY

The study aimed to determine the causes of preventable intrapartum maternal deaths and implement and evaluate the outcomes of selected Maternity Care Guidelines at a selected public hospital in Gauteng province.

This study was conducted to assist healthcare establishments and clinicians to effectively use and implement evidence-based clinical practice or interventions through implementation research. Implementation research is conducted to encourage the improvement of information on a specific phenomenon (preventable intrapartum maternal deaths).

8.3 CONCEPTUAL FRAMEWORK

The study aimed to determine the factors contributing to preventable intrapartum maternal deaths and implement and evaluate the outcomes of specific maternal guidelines at a selected public hospital in Gauteng province. Accordingly, the study was guided by the WHO quality of care

framework for maternal and newborn health (see chapter 1, Figure 1.1 for framework). The researcher selected this framework because quality maternal health care should lead to improvement in clinical processes that should yield good intrapartum outcomes. For the purpose of this study, only the maternal framework was applied. Figure 8.1 depicts the modified framework applied in the phases of the study.

Figure 8.1 Modified WHO quality of care framework for maternal and newborn health

8.3.1 Analysis of the WHO quality of care framework for maternal and newborn health

The study was guided by the WHO (2015) quality of care framework for maternal and newborn health, which indicates that the quality of care is derived from three categories: structure, process, and outcomes.

8.3.1.1 Structure

To render optimal care, midwives need adequate structure. The structure refers to the healthcare facility and includes the resources needed to provide care to patients who are in labour. The selected public hospital provided the human and material resources. The human resources were the midwives and doctors working in the labour ward of the selected public hospital. The essential material resources provided included medical equipment, such as sonar machines, cardiotograph, physiological monitors, and consumables, such as medications. To achieve the best intrapartum outcomes for patients requires appropriate infrastructure where care will be provided. The study was conducted in a selected public hospital in Gauteng Province, South Africa. The structure had personnel, including midwives and, in the labour ward. The target population in the selected hospital were the midwives working in the labour ward. The sample included midwifery nursing managers; matrons/assistant managers and operational managers for the selection and implementation of Maternity care Guidelines.

8.3.1.2 Process

The provision and experience of care are important components of the process of care. Phase 1 and Phase 2 of the study entailed the process. Phase 1 provided the baseline of the study by investigating and auditing the files of patients who died during the intrapartum period to determine the causes of preventable intrapartum maternal deaths. Forty-eight preventable intrapartum maternal deaths were analysed and the causes determined. Phase 2 focused on the implementation of the selected maternity care guidelines. The provision of care emphasises the

use of evidence-based practices for routine care and the management of complications. The researcher and midwives collaboratively selected three (3) maternity care guidelines for implementation during the intrapartum period in the labour ward of the selected public hospital. The selected maternity care guidelines were partogram, management of hypertensive disorders, and obstetric haemorrhage from retained placenta. The selected guidelines were implemented for a period of five (5) months (February 2023-June 2023) (see chapter 5 and table 5.3). Effective communication is among the components for experience of care. Constant open communication was kept between the researcher and the midwives throughout the study. The midwives provided person-centred care throughout the implementation phase, which included respect, preservation of dignity and emotional support to the patient and family during childbirth.

8.3.1.3 Outcomes

The outcomes comprise both individual or people-centred and facility-level outcomes. People-centred referred to patient and midwives' outcomes. Phase 3 entailed the outcomes. Implementation of midwifery evidence-based care should lead to best outcomes during pregnancy, childbirth and puerperium. Phase 3 evaluated the outcomes of the implementation of the selected intrapartum maternal care guidelines.

In Phase 3, the researcher re-audited the intrapartum maternal death files and found that four (4) maternal deaths had occurred in the intrapartum period, with only two preventable intrapartum maternal deaths recorded for the 5 months (February 2023 – June 2023). The individual narrative interviews allowed the midwives to describe their personal and professional experiences and development during the journey of the implementation of the selected maternal care guidelines. Furthermore, the focus group interviews allowed the participant midwives to discuss the factors essential for effective implementation and sustainability of the guidelines. See Chapters 6 and 7 for the outcomes of the implemented maternal care guidelines.

Section 8.4.3.2 presents the summary of the implementation outcomes (Phase 3)

8.4 OUTCOMES OF THE STUDY

The study aimed to determine the causes of preventable intrapartum maternal deaths and implement and evaluate the outcomes of selected maternal care guidelines at a selected public hospital in Gauteng province. To address the research questions, the study was planned and conducted in three phases. The objectives of the study were used as a guide to address the three phases of the research study.

8.4.1 Phase 1: Determination of causes

8.4.1.1 Objective of Phase 1: Determine the factors contributing to preventable intrapartum maternal deaths at a selected public hospital in Gauteng Province

8.4.1.2 Summary of results of Phase 1: Causes of preventable intrapartum maternal deaths

Phase 1 provided the framework for the study. The objective of phase 1 was to determine the factors contributing to preventable maternal deaths during intrapartum. In order to determine the primary and final causes of the intrapartum maternal deaths, the researcher examined and audited the files of 48 patients who died during delivery between 2018 and 2021, using the Perinatal Problem Identification (PPIP) audit tool to analyse the data.

- **Primary causes of preventable intrapartum maternal deaths**

In total, forty-eight intrapartum maternal deaths were potentially preventable. The most common causes of the deaths were obstetric haemorrhage (37.5% n=18) and hypertensive disorders (31.2% n=15) in pregnancy. Obstetric haemorrhage ranged from hypovolemic shock caused by antepartum haemorrhage (APH) (10.4% n=5) to postpartum haemorrhage (PPH) (27.1% n=13), while hypertensive disorders included eclampsia (10.4% n=5), and HELLP syndrome (9.4% n=5). COVID-19-related deaths (27.1% n=13) were caused by acute respiratory failure and Covid pneumonia. Septic shock accounted for (4.2% n=2) deaths and multi-organ failure (10.4% n=5).

- **Final causes of preventable intrapartum maternal deaths**

The final causes of preventable intrapartum maternal deaths were also determined. Hypovolemic shock accounted for 37.5% (n=18), followed by respiratory failure at 27.1% (n=13), and multi-organ failure at 20.83% (n=10). The hypovolemic shock was caused by obstetric haemorrhage, specifically postpartum haemorrhage from a retained placenta. There were two deaths from pneumonia-related respiratory failure and one death from an embolism. The results showed that multi-organ failure and metabolic acidosis were among the most frequent causes of preventable intrapartum maternal deaths. Multi-organ failure and metabolic acidosis were caused by pre-eclampsia, eclampsia, and HELLP syndrome.

8.4.2 Phase 2: Implementation

8.4.2.1 Objective of Phase 2: Implement the selected intrapartum maternal care guidelines to reduce preventable maternal deaths at the hospital.

8.4.2.1 Summary of results of Phase 2: Implementation of selected intrapartum maternal care guidelines

Phase 2 of the study focused on the implementation of selected intrapartum maternal care guidelines during the intrapartum period. The implementation of the intrapartum maternal guidelines was a collaborative effort between the researcher, the operational managers and the midwives working in the labour ward. To determine which intrapartum maternal guidelines should be implemented to reduce preventable intrapartum maternal deaths, the researcher met with the midwives for a consensus workshop at the selected public hospital to select specific intrapartum maternal guidelines. Based on the causes of the preventable intrapartum maternal deaths, three intrapartum maternal guidelines were agreed upon for implementation in the selected public hospital's labour wards. Under the direction and supervision of the two research supervisors, the researcher and the midwives decided on the dates that the implementation would commence.

The three specific maternal care guidelines to be implemented throughout the intrapartum period were: use of the partogram, management of hypertensive diseases, and management of obstetric haemorrhage from retained placenta. The implementation phase began in February 2023 and continued until June 2023. The midwives were urged to follow the other intrapartum maternal guideline standards. The midwives were informed that the three selected maternal guidelines represented the biggest causes of intrapartum maternal mortality that might have been prevented at the selected public hospital. To make sure that the intrapartum maternal guidelines were executed successfully and efficiently, the researcher held regular meetings with the midwives. To facilitate efficient communication in real-time, a WhatsApp group was created. During implementation, facilitator roles were given to the shift leaders of each shift in the labour ward. This was done to make sure that the implementation programme would continue even without the researcher present. The three selected intrapartum maternal care guidelines were successfully implemented in the selected public hospital by the researcher and midwives under the supervision of the research supervisors (see chapter 5, table 5.3 for comprehensive report of the implementation).

8.4.3 Phase 3: Evaluation

8.3.3.1 Objective of Phase 3: Evaluate the outcomes of the implemented intrapartum maternal care guidelines to reduce preventable maternal deaths at the selected hospital.

8.4.3.1 Summary of results of Phase 3: Implementation outcomes of selected intrapartum maternal care guidelines

Phase 3 of the study focused on the outcomes of the implementation of the selected intrapartum maternal guidelines. This phase had two sub-phases that evaluated the implementation outcomes. The population of phase 3 included the midwives working in the labour ward of the selected public hospital and the outcomes were discussed in two rounds: narrative interviews and focus group discussions.

(a) Experiences of midwives regarding the implementation outcomes: Narrative interviews

The first round of evaluation looked at what the implementation of maternal guidelines to reduce preventable maternal deaths journey meant to the participant midwives personally and professionally. Data was collected using individual narrative interview guides. Twenty-three midwives who met the inclusion criteria and consented to participate in the study were given a narrative interview guide to answer the research question. Twenty midwives participated in the study and returned the completed narrative interview guide to the researcher. Content data analysis was conducted on the 20 individual narrative interviews. The study yielded four interrelated themes: (1) adherence to intrapartum maternal guidelines; (2) improved decision-making, (3) effective intrapartum maternal guidelines, and (4) barriers to effective implementation of intrapartum maternal guidelines.

- **Theme 1: Adherence to intrapartum maternal care guidelines**

The participants stressed the importance of following the maternal care guidelines since they effectively reduced preventable intrapartum maternal deaths. However, the midwives also stressed the significance of including the doctors in the implementation process. The midwives stated that they were aware of the need to follow maternal guidelines set by the South African Nursing Council and the Department of Health.

- **Theme 2: Improved decision making**

The midwives expressed that the implementation of the selected maternal care guidelines improved their thinking abilities as they could execute care during the intrapartum period even in the absence of a medical doctor. By doing that the participants had an increased sense of patient advocacy.

- **Theme 3: Effective intrapartum maternal guidelines**

The participant midwives stated that the maternal guidelines were effective in reducing maternal deaths, especially avoidable ones. The midwives indicated that they would continue with the implementation of the maternal guidelines, but they needed collaboration and support from the hospital management.

- **Theme 4: Barriers to effective implementation of intrapartum maternal care guidelines**

The midwives expressed their concerns regarding the factors that hindered the effective implementation of the selected maternal care guidelines. They identified inadequate infrastructure shortage of staff and medical equipment as barriers to the efficient implementation of the maternal care guidelines.

(b) Factors for sustainability of maternal guidelines: Focus group interviews

The second round of implementation outcomes focused on evaluating the selected intrapartum maternal guidelines using Proctor, Silmere, Raghavan et al's (2011) criteria. Four focus group interviews were held. Data was collected from 14 July 2023 to 21 July 2023.

- **Feasibility**

The participant midwives were asked how they could ensure that the intrapartum maternal guidelines were feasible at the selected public hospital. Two themes emerged, Theme 1: Available and accessible intrapartum maternal guidelines and Theme 2: Value the multidisciplinary approach. The midwives stated that other members of the multidisciplinary team, including doctors and obstetricians, should be able to access the intrapartum maternal guidelines in the labour ward and put them into practice. Since they receive training from various educational institutes, the midwives discussed the importance of having a single procedure that is standard and used by both midwives and doctors.

- **Acceptability**:

Acceptability was the second question and asked the midwives how to foster support among local stakeholders for the best implementation of intrapartum maternal care guidelines at the selected public hospital. One theme emerged, Theme 3: Support clinical research evidence practice. According to the midwives, the intrapartum maternal guidelines, which have been identified and endorsed by the World Health Organization, should be accepted by clinicians. Moreover, all healthcare institutions that provide maternity services are expected to follow the maternal guidelines, not only the selected public hospital.

- **Appropriateness**

The third question asked the participant midwives about the relevancy, efficiency, and effectiveness of the intrapartum maternal guidelines. One theme emerged, Theme 4: Relevant intrapartum maternal care guidelines. According to the participants, the intrapartum maternal guidelines are relevant and crucial during labour. The midwives indicated that the selected maternal guidelines had reduced intrapartum maternal deaths, especially preventable maternal mortalities.

- **Adoption**

The fourth question asked the midwives to explore how they would encourage other midwives to use the intrapartum guidelines. Theme 5: Awareness about the use of evidenced midwifery practice emerged. The midwives expressed the importance of creating awareness within public healthcare facilities on the importance of providing evidence-based practice through research.

- **Penetration**

Penetration of the selected maternal care guidelines was the fifth question. The participant midwives were asked to describe how they could assist other midwives in adopting the intrapartum maternal guidelines in the prevention of preventable intrapartum maternal deaths. Two themes emerged from this question, namely Theme 6: Dissemination of results from implemented intrapartum maternal guidelines and Theme 7: Engaging relevant stakeholders.

The participant midwives emphasized the need for management to provide information about the causes of maternal deaths, and indicated that the implementation of the selected intrapartum maternal care guidelines had contributed to a decline in maternal mortality, especially preventable maternal deaths. The midwives stated that such information sharing may take place during the discussions on maternal morbidity. To guarantee that every midwife and medical doctor is well informed about the relevant maternal guidelines and protocols, the midwives stressed the importance of collaborating with other hospital departments where maternity patients are admitted.

- **Sustainability**

This was the last question during the focus group interviews that asked the midwives how they would ensure that intrapartum maternal care guidelines remained effectively implemented throughout the intrapartum period. Four themes emerged: Theme 8: Adequate infrastructure, Theme 9: Adequate staffing, Theme 10: Continued training and monitoring of staff, and Theme 11: Clinical audits.

According to the midwives, the implementation of the selected maternal guidelines during labour is negatively impacted by poor infrastructure and staffing. The midwives supported the use of maternal guidelines, and also advised regular staff training and clinical audits, using patient files or the partogram, to determine whether staff members were following the recommendations.

- **Re-audit of intrapartum maternal deaths**

The researcher audited the maternal deaths that occurred during the implementation phase, using the same audit tool (PIPP audit tool). Using the PIPP audit tool, there were four (4) intrapartum maternal deaths that had occurred during the implementation phase that were audited. Two (2) intrapartum maternal deaths were preventable. The first preventable intrapartum maternal death occurred in February, 2023. The primary cause was pulmonary oedema which subsequently led to respiratory failure and multi-organ failure with brain death. In terms of avoidable deaths, administrative factors from no accessible ICU bed with a ventilator, insufficient nurses on duty to manage the patient adequately, and personnel not sufficiently trained to manage the patient, contributed to the deaths. The second preventable intrapartum maternal death occurred in April

2023. This patient delivered at home and presented in the labour ward. The primary cause of death was obstetric haemorrhage from the retained placenta, with the final cause of death being hypovolemic shock. Patient-associated factors included that the woman never initiated ANC and delayed seeking medical attention during labour. In terms of administrative factors, inadequate theatre facilities and inadequate personnel associated management plan were included.

8.5 CONTRIBUTION AND STRENGTHS OF THE STUDY

The findings of this study will contribute to the body of knowledge and improve clinical governance in creating awareness in South Africa on the value of implementation research to address challenges in clinical practice.

Research is a fundamental approach for effective and efficient tools for gaining knowledge, achieving objectives and identifying gaps or areas that need improvement. This study focused on determining the causes of preventable intrapartum maternal deaths, implementing selected maternal care guidelines, and evaluating the outcomes. To enable the midwives to evaluate the outcomes of the maternal guidelines' implementation, a narrative interview guide was developed. The focus group interviews and the narrative interviews were used to triangulate the data collected. To fulfil the purpose of the study objectives and to answer the research question, a purposive sampling method was used throughout the three phases. Purposive sampling methods, allowed the researcher to select experienced midwives with adequate knowledge to fulfil the objectives of the study. The midwives participated during the implementation of the selected maternal care guidelines and as well as the evaluation of the outcomes of the implementation process.

The implementation of the intrapartum maternal guidelines followed a bottom-up strategy, which promoted collaboration with the midwives and ensured their buy-in because everyone was given the chance to give inputs and influence decision-making, regardless of seniority. This was made clear during the consensus workshop where the decision-making authority was shared equally by the researcher, the midwives, and the research supervisors. By giving both midwives and researchers an equal chance to influence the implementation processes and outcomes of the

intrapartum maternal guidelines, the bottom-up approach helped to improve relationships between the midwives. The bottom-up strategy was beneficial since it gave everyone involved in the implementation a sense of ownership. To determine the causes and whether the implemented maternal guidelines had an effect, the researcher re-audited the intrapartum maternal deaths that occurred during the implementation phase. The main strengths of the study are that the objectives were achieved and that there was a decline in preventable intrapartum maternal deaths during the implementation phase.

8.6 LIMITATIONS OF THE STUDY

The researcher identified the following limitations of the study:

- The study was restricted to one public hospital in Gauteng province; therefore, the findings cannot be generalised to other public hospitals in Gauteng or elsewhere.
- The use of individual narrative interviews to collect the participant midwives' experiences of the implementation of selected maternal guidelines did not allow probing, which might have led to more detailed data.

8.7 UNIQUE CONTRIBUTION OF THE STUDY

To date, few studies in South Africa have investigated the implementation of evidence-based interventions in clinical practice, particularly in midwifery. In addition, the researcher used a bottom-up approach which enriched the findings. The causes of preventable intrapartum maternal deaths at the selected hospital were identified.

For the successful implementation of maternal guidelines throughout the intrapartum period, the researcher involved midwives in their selection for implementation in the labour ward of the selected public hospital. Based on the findings in Phase 1, the participants were able to identify essential maternal guidelines for implementation during labour. Consequently, the participants felt a sense of responsibility for the implementation, a desire to provide high quality intrapartum care

and achieve the best implementation outcomes.

The shift leaders, who were the midwives in charge of each shift in the labour unit, were the primary facilitators of the implementation of the selected guidelines. Phase 3 contributed new data by giving the midwives an opportunity to evaluate the outcomes of the implemented guidelines.

While the midwives implemented the selected guidelines, they simultaneously implemented other maternal guidelines during labour which improved their practice and yielded the best intrapartum outcomes. Providing high-quality intrapartum care through the implementation of maternal care guidelines benefits both the mother and the foetus while enhancing neonatal outcomes.

The findings should benefit the Department of Health, other healthcare facilities, maternity birthing units, and health professionals to improve the implementation of maternal care guidelines to lower intrapartum maternal deaths.

8.8 RECOMMENDATIONS

Policymakers should invest in implementation research that supports evidence-based clinical practice.

Based on the findings, the researcher makes the following recommendations for midwifery practice, nursing education, and further research.

8.8.1 Midwifery practice

Midwives and midwifery nursing managers as leaders of maternity departments should adhere to the legal guidelines or regulatory frameworks that govern the midwifery profession. These guidelines uphold midwives' autonomy and strengthen their professionalism.

Midwives should adhere to their scope of practice and take responsibility in accordance with their abilities, expertise, and knowledge necessary for carrying out all procedures. This would protect them, the medical facility, their peers, and the patient.

To offer high-quality care throughout the birth process, managers and midwives should ensure that the labour ward has a culture that supports and encourages a person-centred intrapartum approach.

Midwives should understand the physiology of labour and the hormonal changes that occur during pregnancy and labour. This will help them to develop strong interpersonal and communication skills and to encourage patients who are difficult to cooperate during the intrapartum period.

Regular assessment of the skills and competency of health professionals, including midwives, doctors, obstetricians, and anaesthetists is required to ensure that all clinicians provide safe care to the women during pregnancy, labour, and puerperium.

The following measures are also recommended:

- Construct and ensure availability of maternal care guidelines to all levels of care such as health care centres and hospitals.
- Strategies to combat the barriers to effective implementation of intrapartum maternal care guidelines
- Strengthening of the health care system to ensure that maternity health care services are available in an adequate and safe infrastructure
- Adequate staffing, which should include different health professionals, such as midwives, doctors, and anaesthetists
- Availability of medical types of equipment and consumables according to the levels of care
- Continuous clinical audits and assessments on compliance with the prescribed standards and protocols to combat preventable maternal deaths
- Accountability for every preventable maternal death
- The implementation of evidence-based care maternity services throughout pregnancy, labour and puerperium involves multidisciplinary collaboration among health care professionals, including doctors, midwives, and anaesthetists. The transition to a multidisciplinary care strategy makes it possible for other medical professionals to receive and expand evidence-based care.
- Midwives should actively pursue professional development in the areas of research and its implementation in clinical practice.

- Midwives should provide a safe environment and foster a nurse-patient relationship with women so that they feel at ease and confident during labour. Additionally, this will encourage the women to cooperate more, which may result in optimal intrapartum outcomes and clinical practice that is both efficient and effective.
- At various levels, hospital managers, clinical governance, quality assurance, and nursing managers should promote the incorporation of evidence-based clinical practices through implementation research.
- In order to improve patient outcomes, evidence-based midwifery practice should integrate the best and most recent research findings, clinical expertise, and judgement.
- Midwives should apply critical thinking skills to assess patients thoroughly by gathering both subjective and objective data, diagnose patients, plan and carry out the recommended care, and assess the outcomes in relation to expectations.
- In order to update the care plan and prioritise the provision of care in accordance with patients' changing needs, identified problems or diagnosis, midwives should evaluate the women's response to intrapartum care interventions in accordance with the pre-established criteria or when necessary.
- To stay current with nursing changes, midwives should actively participate in research projects. This will also enable them to identify gaps and choose evidence-based midwifery practices to implement.
- Midwives should regularly participate in research projects dealing with intrapartum-related issues. To give the most effective intrapartum care, midwifery managers should ensure that the labour wards have access to approved, understandable, evidence-based maternity guidelines and protocols.
- Midwives should ensure that women participate in their treatment and receive essential information to enable them to make informed choices.
- Midwives should constantly advocate for the protection of expectant mothers in order to guarantee that patients have the safest and finest intrapartum care.
- Labour wards must conduct clinical audits, including observation, clinical records, intrapartum care records such as labour initiation and partogram, and patient surveys on experience of care, to identify areas that require improvement and to develop quality improvement plans to raise the quality of care offered to women.
- A quality improvement plan should include gaps identified, steps that need to be taken to improve care, accountable people or parties, and timeframes.

- Midwives must openly engage with midwifery nursing managers, policy makers and clinical governance on issues that negatively affect the provision of quality maternity services.
- It is imperative that midwives actively discuss concerns that impede the delivery of high-quality maternity care with policy makers, clinical governance, and managers of midwifery nursing.

8.8.1.1 Midwifery education

The Department of Health, the SANC and nursing education institutions should:

- Educate midwives to meet evolving health demands.
- Emphasise the role of midwives in creating innovative solutions of health care delivery including the theory and practical application of research in accordance with the global standards for midwifery education to enable midwives to evaluate, analyse, and critically apply relevant research findings to support evidence-based midwifery practice.
- Equip midwives with the knowledge and abilities required to engage in therapeutic relationships with multidisciplinary teams and stakeholders.
- Include implementation research in nursing programmes or courses, and initiate strategies for implementation of theory in practice and ways to combat barriers to effective implementation.
- Develop an agenda to address the causes of maternal deaths, particularly those that may be prevented
- Encourage midwives to stay up to date with the changes in the midwifery profession by ongoing professional development throughout their careers.
- Introduce and emphasise the significance of implementation research through the provision of evidence-based practice as early as possible in programmes
- Introduce strategies for implementation of theory into practice and ways to combat barriers to effective implementation.
- Encourage and prepare nurses and midwives to address the determinants of health and achieve health equity through programmes and continuing education.

8.8.1.2 Further research

Further research should be conducted on the following topics:

- A qualitative investigation into midwives' experiences of the implementation of maternal guidelines to reduce preventable intrapartum deaths
- An examination of methods to address the implementation of maternal guidelines to reduce preventable intrapartum maternal deaths at public hospitals
- Midwives', obstetricians' and doctors' perspectives on the use of the partogram in the prevention of intrapartum maternal deaths
- An examination of methods that assist midwives in promoting, providing and incorporating evidence-based practice to improve the health of the mother and her unborn child
- The role of peer review and research on the development of midwifery knowledge
- The impact of technology as an intervention on the role of midwives during the intrapartum period
- The perceptions of midwives on the role and importance of evidence-based practice (EBP) in efficient midwifery practice

8.9 CONCLUSION OF THE RESEARCH STUDY

This study was a journey of discovery for the researcher that involved examination, reflection and courage. The researcher hopes and believes that this study will provide policymakers, midwives, nursing service managers, and clinicians at large an insight into the significance of incorporating research into clinical practice and, in turn, improve clinical practice and intrapartum care to achieve the best intrapartum patient outcomes.

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Annexure A

Approval letter from In-House Committee

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences

Faculty Ethics Committee
Faculty of Health Sciences
University of Pretoria

9 March 2022

To whom it may concern,

Evaluation of a protocol for the following student:

Student:	Makgoba Meldah Mokone (13243854)
Title:	Multidsciplinary strategies to reduce preventable intrapartum maternal deaths at a public hospital in Gauteng

This letter serves to confirm that the above-mentioned protocol was discussed by the Postgraduate Committee of the School of Health Care Sciences during an online meeting.

The proposal was accepted with minor changes, and supervisors affirmed that the corrections were implemented.

The proposal is hereby referred to your committee for ethical clearance.

Sincerely yours,

Prof Kitty Uys
Chairperson
Research and postgraduate committee

Faculty of Health Sciences
Room 5-19, Level 5, HW Snyman South,
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Faculty of Health Sciences
Department of Occupational Therapy
Fakulteit Gesondheidswetenskappe
Departement Arbeidsterapie
Lefapha la Disaense tša Maphelo
Kgoro ya Terapi ya Mošomong

Annexure B

Approval letter from Ethics Committee - University of Pretoria

Institution: The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- FWA 00002567, Approved dd 18 March 2022 and Expires 18 March 2027.
- IORG #: IORG0001762 OMB No. 0990-0278 Approved for use through August 31, 2023.

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

Faculty of Health Sciences **Research Ethics Committee**

25 August 2022

Approval Certificate
Amendment

Dear Ms MM Mokone,

Ethics Reference No.: 132/2022 – Line 1
Title: IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA- PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

The **Amendment** as supported by documents received between 2022-07-26 and 2022-08-24 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on 2022-08-24 as resolved by its quorate meeting.

Please note the following about your ethics approval:

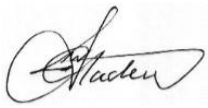
- Please remember to use your protocol number (132/2022) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely



On behalf of the FHS REC, Professor Werdie (CW) Van Staden
MBChB, MMed(Psych), MD, FCPsych(SA), FTCL, UPLM
***Chairperson**: Faculty of Health Sciences Research Ethics Committee*

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health).

Research Ethics Committee
Room 4-60, Level 4, Tswelopele Building
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Gezina 0031, South Africa
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Email: deepeka.behari@up.ac.za
www.up.ac.za

Fakulteit Gesondheidswetenskappe
Lefapha la Disaense tša Maphelo

Annexure C

Permission to conduct research from the Selected public hospital

Makgoba Meldah Mokone

Annexure E

Participant information and informed consent document (Phase 2)

Makgoba Meldah Mokone

Annexure F1

Participant information and informed consent document (Phase 3: Narratives interviews)

Makgoba Meldah Mokone

Annexure F1

Participant information and informed consent document (Phase 3: Focus group interviews)

Makgoba Meldah Mokone

Annexure G

Data collection (PIPI) clinical audit tool (Phase 1)

Makgoba Meldah Mokone

Annexure H

Permission letter to use PPIP audit tool

Annexure I

Letter from Statistician for Phase 1 descriptive data analysis

Makgoba Meldah Mokone

Annexure J

Invitation letter for consensus workshop (Phase 2)

Annexure K

Agenda for the workshop (Phase 2)

Makgoba Meldah Mokone

Annexure L

Presentation of results/slides (Phase 2)

Makgoba Meldah Mokone

Annexure M

Poster during implementation of Maternity Care Guidelines (Phase 2)

Makgoba Meldah Mokone

Annexure N

Letter from language editor

Makgoba Meldah Mokone

Annexure O

Declaration

Annexure P

Letter from technical editor

Makgoba Meldah Mokone

Annexure Q

Phase 2 Workshop transcription

Makgoba Meldah Mokone

ANNEXURE C

PERMISSION LETTER/REQUEST TO CONDUCT THE STUDY

TO: The manager/Chief Executive Officer

Re: Permission to do research at: [redacted] Provincial Tertiary Hospital

TITLE OF STUDY: IMPLEMENTATION OF MATENAL GUIDELINES TO REDUCE PREVENTBALE INTRAPARTUM MATERNAL DEATHS AT A SELCTED PUBLIC HOSPITAL IN GAUTENG

This request is lodged with you in terms of the requirements of the Promotion of Access to Information Act. No. 2 of 2000.

I am a Ph D student at University of Pretoria, Department of Nursing science. I hereby request permission to conduct a study on the above topic at your institution. This study involves access to the institutional data on maternal deaths, midwives and obstetricians.

I request to conduct a study on midwives and obstetrician upon receipt of their consent. I intend to publish the findings of the study in a professional journal and/ or to present them at professional meetings like symposia, congresses, or other meetings of such a nature. Ethical principles will be adhered to e.g. privacy and confidentiality. The personal identity of the participants will be protected by assigning each individual a random code number. I undertake not to proceed with the study until I have received approval from the Faculty of Health Sciences Research Ethics Committee, University of Pretoria, Gauteng Department of Health and Ekurhuleni District.

If you have any queries concerning this research study, you're welcome to contact the following people: Meldah Mokone on 083 472 3614 Email: mokonemeldah@yahoo.co.za;Research Supervisors: Prof I. Coetzee-Prinsloo Email:Isabel.coetzee@upac.za and Dr M. Yazbek Email:mariatha.yazbek@up.ac.za

Yours sincerely
Signature: Meldah Mokone
Principal Investigator

Annexure D

Permission to conduct research from Gauteng Department of Health

GAUTENG PROVINCE

REPUBLIC OF SOUTH AFRICA

[redacted]ROVINCIAL TERTIARY HOSPITAL
PR NO: 5602793
Cnr Flint Mazibuko Or & R11v Namane. Olifantsfonticm, 1665
Private Bag X 07.0lifantsfontein.1665
Tel: 011 923 2320
Enquiries: Dr MJ Mathabathe
E-mail: Mohlamme.Mathabathe@gauteng.gov.za

To **Ms Makgoba Mokone**

Subject Permission to conduct research at [redacted] Provincial Tertiary Hospital

From : Dr MJ Mathabathe, Acting Chief Executive Officer, [redacted] Provincial Tertiary Hospital

Date : 30 August 2022

This is to notify you that you have been granted permission to conduct research in our institution for the following study:

Study Title: Implementation of maternal guidelines to reduce preventable intra- partum deaths at a selected public hospital in Gauteng

NHRO Reference Number: GP_202208_090

Permission with the following restrictions:

- The study should not interfere with service provision.
- Data collection should not be done by hospital staff but the researcher themselves

Permission to conduct research as per study protocol

Please note the institution requires for all data collection and interaction with staff; patients or records to be as outlined in the study protocol and within the constraints of ethics approval obtained for this study. Should any of these parameters or professional conduct be violated at any stage then the Tembisa Research Committee reserves the right to review and change the decision to allow the researcher to conduct research at the institution.

Please report to the undersigned chair of the Research Committee with all your documents on the first day at the institution for further instructions and introductions.

You are requested to share the research findings with Tembisa Provincial Tertiary Hospital Team at the conclusion of the study.

Recommended by:
TPTH Research Committee
Signature:
Date:

Approved by:
Dr MJ Mathabathe
Acting CEO, [redacted] Provincial Tertiary Hospital
Signature:
Date: 10/10/2022

Annexure E

Participant information and informed consent document (Phase 2)

Makgoba Meldah Mokone

ANNEXURE E

PARTICIPANT INFORMATION AND INFORMED CONSENT DOCUMENT (PHASE 2)

STUDY TITLE: IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA- PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

Principal Investigator: Meldah Mokone
Supervisor: Prof I. Coetzee-Prinsloo
Co-Supervisor: Dr M. Yazbek

Institution: **University of Pretoria**

DAYTIME AND AFTER-HOURS TELEPHONE NUMBER(S):

Daytime number/s: 083 472 3614

After hour's number: 082 059 8504

Dear Prospective Participant

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing research for a PhD degree purpose at the University of Pretoria. This information in this document is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy about all the procedures involved.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of the study is to implement intrapartum guidelines to reduce preventable maternal death in a selected public hospital in Gauteng. By doing so we wish to learn more about the causes of the preventable intrapartum maternal deaths, so we could report on the outcomes on the Implemented intrapartum guidelines to reduce preventable maternal deaths.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPEXTED FROM PARTICIPANTS.

Phase Two of the study is to implement intrapartum guidelines to reduce preventable maternal death in a selected public hospital in Gauteng. If you agree to participate in the study,
you will be provided with a self-report interview guide, which you will be expected to answer the questions and submit the self-report interviews within two weeks.

4) POSSIBLE RISKS AND DISCOMFORTS INVOLVED

There are no medical risks associated with the study. We do not think that participating in the study will cause any physical or emotional discomfort or risk.

5) POSSIBLE BENEFITS OF THIS STUDY

Although you may not benefit directly by being part of the study. The information you give may help the researcher to make recommendations, develop guidelines and multidisciplinary strategies to decrease preventable intrapartum maternal deaths in public hospitals.

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) YOUR RIGHTS AS A RESEARCH PARTICIPANT

The decision to take part in the study is you're alone. You do not have to take part if you do not want to. Your participation in this trial is entirely voluntary and you can refuse to participate or stop at any time without stating any reason. If you refuse to take part in the study, this will not affect you in anyway.

8) ETHICS APPROVAL

This study was submitted to the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study will follow the Declaration of Helsinki (last update:

October 2013), which guides doctors on how to do research in people. The researcher can give you a copy of the Declaration if you wish to read it.

9) INFORMATION

If I have any questions concerning this study, I should contact: Research Supervisors: Prof I. Coetzee-Prinsloo Tel:071 158 9045 Email: Isabel.coetzee@up.ac.za and Dr M. Yazbek Tel:082 576 3558 Email: mariatha.yazbek@up.ac.za during office hours.

10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output. All records from this study will be regarded as confidential. Results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study. However, the records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the Research Ethics Committee. All of these people are required to keep your identity confidential. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records. All hard copy information will be kept in a locked facility in the safe at the University of Pretoria, for a minimum of 15 years and only the research team will have access to this information.

11) CONSENT TO PARTICIPATE IN THIS STUDY

I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study. I have also received, read and understood the above written information about the study. I had adequate time to ask questions and I have no objections to participate in this study. I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results. I understand that I will not be penalized in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care. I am participating willingly.
I have received a signed copy of this informed consent agreement.

Participant Name: _____

Participant Signature:_____ Date: _____

Researcher's Name: _____

Researcher's Signature: _____ Date: _____

Witness Name: _____

Witness Signature: _____ Date: _____

DATA COLLECTION GUIDE

Phase Two: The implementation of intrapaturm Maternity Care Guidelines to reduce preventable maternal deaths at a selected public hospital in Gauteng.

Dear Prospective Participant.

Thank you very much for giving consent to participate in the study.

The following intrapaturm guidelines but not limited will be implemented in the labour ward where you're working

- ✓ Management of hypertensive disorders
- ✓ Partogram
- ✓ Obstetric haemorrhage from retained placenta

INSTRUCTIONS

- ✓ N.B Kindly note that this research study aims at improving maternal health outcomes through the implementation of intrapaturm l guidelines to reduce preventable intrapaturm maternal deaths at a selected public hospital in Gauteng, therefore service delivery will not be affected.
- ✓ The intrapaturm guidelines will be implemented for the period of for five months.
- ✓ Each participant is responsible for ensuring the successful implementation and facilitation of the maternal guidelines in order to reduce preventable maternal deaths.
- ✓ Each workgroup member will have a reflective dairies to documents all the events observation and meeting held during the implementation process.
- ✓ Each participant will assign a pseudonym name on his/her diary
- ✓ Please use black ink, legible and only use approved abbreviation.
- ✓ Please write the unit/ward your working and years of experience.
- ✓ Please do not write the name of the hospital, names of patients, staff members.
- ✓ Please write the date and time for every entry/notes done in the reflective diary.
- ✓ Action plan will be negotiated with workgroup members for implementation: Dates and times for meetings, sessions, feedback ect will be planned and schedules over a 6-month period

ONCE AGAIN, THANK YOU VERY MUCH FOR PARTICIPATING IN THE STUDY.

Annexure F1

Participant information and informed consent document (Phase 3: Narratives interviews)

Makgoba Meldah Mokone

ANEXURE F1

PHASE 3 DATA COLLECTION

PARTICIPANT INFORMATION AND INFORMED CONSENT FOR INDIVIDUAL NARRATIVES INTERVIEW

STUDY TITLE: IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA- PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

Principal Investigator: Meldah Mokone
Supervisor: Prof I. Coetzee-Prinsloo
Co-Supervisor: Dr M. Yazbek

Institution: **University of Pretoria**

DAYTIME AND AFTER HOURS TELEPHONE NUMBER(S):

Daytime number/s: 083 472 3614

After hours number: 082 059 8504

Dear Prospective Participants.

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing research for a PhD degree purpose at the University of Pretoria. This information in this document is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy about all the procedures involved.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of the study is to develop multidisciplinary strategies to reduce preventable intrapartum maternal death at a public hospital in Gauteng.By doing so we wish to learn more about the causes of the preventable intrapartum maternal deaths, so we could develop multidisciplinary strategies to reduce the preventable intrapartum deaths.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPEXTED FROM PARTICIPANTS.

If you agree to take part in this study, you must sign a consent form and agree to participate in a individual narrative interview which discusses **Report on the outcomes of the Implemented intrapartum guidelines to reduce preventable maternal deaths at selected public hospital in Gauteng.**

4) POSSIBLE RISKS AND DISCOMFORTS INVOLVED

There are no medical risks associated with the study. We do not think that participating in the study will cause any physical or emotional discomfort or risk.

5) POSSIBLE BENEFITS OF THIS STUDY

Although you may not benefit directly by being part of the study. The information you give may help the researcher to provide report and evaluate the outcomes of the Implemented intrapartum guidelines to reduce preventable maternal deaths.

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) YOUR RIGHTS AS A RESEARCH PARTICIPANT

The decision to take part in the study is yours alone. You do not have to take part if you do not want to. Your participation in this trial is entirely voluntary and you can refuse to participate or stop at any time without stating any reason. If you refuse to take part in the study, this will not affect you in anyway.

8) ETHICS APPROVAL

This study was submitted to the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval

has been granted by that committee. The study will follow the Declaration of Helsinki (last update: October 2013), which guides doctors on how to do research in people. The researcher can give you a copy of the Declaration if you wish to read it.

9) INFORMATION

If I have any questions concerning this study, I should contact: Research Supervisors: Prof I. Coetzee-Prinsloo Tel:071 158 9045 Email:Isabel.coetzee@upac.za and Dr M. Yazbek Tel:082 576 3558 Email:mariatha.yazbek@up.ac.za during office hours.

10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output. All records from this study will be regarded as confidential. Results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study. However, the records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the Research Ethics Committee. All of these people are required to keep your identity confidential. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records. All hard copy information will be kept in a locked facility in the safe at the University of Pretoria, for a minimum of 15 years and only the research team will have access to this information.

11) CONSENT TO PARTICIPATE IN THIS STUDY

I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study. I have also received, read and understood the above written information about the study. I had adequate time to ask questions and I have no objections to participate in this study. I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results. I understand that I will not be penalized in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care. I am participating willingly.
I have received a signed copy of this informed consent agreement.

Participant Name: _____

Participant Signature:_____ Date: _____

Researcher's Name: _____

Researcher's Signature: _____ Date: _____

Witness Name: _____

Witness Signature: _____ Date: _____

Phase Three: Report on the outcomes on the Implemented intrapartum guidelines to reduce preventable maternal deaths at s selected public hospital in Gauteng.

The researcher will provide the experts with a brief information guide in a pamphlet which will have the researcher contact details, research topic, the background, objectives, methods, data collection and ethical considerations and permission letters from Gauteng Department of Health and the hospital Chief Executive Officer to conduct the study.

The following central question will be asked to guide data collection of Phase Three. The researcher will ask all other participants (Midwives) to write what was the worth or value of the implementation of the intrapartum guidelines to the personally/professionally.

PHASE 3 DATA COLLECTION TOOL

INTERVIEW GUIDE FOR INDIVIDUAL NARATIVES INTERVIEW

Dear Prospective Participant.

Thank you very much for giving consent to participate in the study.

INSTRUCTIONS

- N.B Kindly note that you have two (2) weeks to complete the self-report interview from the day of recipient**.**
- Do not share or ask anybody to assist you in completing the self-interview guide, it is your interview and remains confidential.
- Please use black ink, legible and only use approved abbreviation.
- Please do not write the names of patients, staff members or the hospital
- After completion, Kindly put the self-guide interview document in the envelope provided and seal it and submit to the researcher
- The researcher will make a follow up in 2 weeks and should you finish completing the self-report interview before two weeks, kindly contact the researcher using the contact details provided on the informed consent/ study information document

Date

Date	**Month**	**Year**

Name of the hospital ……..

Occupation……..

Ward/unit your working…….

Year/s of experience……

Phase Three: What did the implementation of the intrapaturm guidelines to reduce preventable intrapaturm maternal deaths journey meant to you personally and professionally?

ONCE AGAIN, THANK YOU VERY MUCH FOR PARTICIPATING IN THE STUDY.

Annexure F2

Participant information and informed consent document (Phase 3: Focus group interviews)

Makgoba Meldah Mokone

ANEXURE F2

PHASE 3 DATA COLLECTION

PARTICIPANT INFORMATION AND INFORMED CONSENT FOR THE FOCUS GROUP INTERVIEW

STUDY TITLE: IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA- PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

Principal Investigator: Meldah Mokone
Supervisor: Prof I. Coetzee-Prinsloo
Co-Supervisor: Dr M. Yazbek

Institution: **University of Pretoria**

DAYTIME AND AFTER HOURS TELEPHONE NUMBER(S):

Daytime number/s: 083 472 3614

After hours number: 082 059 8504

Dear Prospective Participants.

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing research for a PhD degree purpose at the University of Pretoria. This information in this document is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the researcher. You should not agree to take part unless you are completely happy about all the procedures involved.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of the study is to develop multidisciplinary strategies to reduce preventable intrapartum maternal death at a public hospital in Gauteng.By doing so we wish to learn more about the causes of the preventable intrapartum maternal deaths, so we could develop multidisciplinary strategies to reduce the preventable intrapartum deaths.

3) EXPLANATION OF PROCEDURES AND WHAT WILL BE EXPEXTED FROM PARTICIPANTS.

If you agree to take part in this study, you must sign a consent form and agree to participate in a focus group interview, which discusses **Report on the outcomes on the Implemented intrapartum guidelines to reduce preventable maternal deaths at s selected public hospital in Gauteng.**

You must provide your permission for the interview to be recorded. The focus group usually lasts 45 to 90 minutes, but it could last longer depending on the engagement of other participants. Prior to the start of the focus group interviews, you will be asked to choose a pseudonym for yourself, which will be written on your name tag.

4) POSSIBLE RISKS AND DISCOMFORTS INVOLVED

There are no medical risks associated with the study. We do not think that participating in the study will cause any physical or emotional discomfort or risk.

5) POSSIBLE BENEFITS OF THIS STUDY

Although you may not benefit directly by being part of the study. The information you give may help the researcher to provide report and evaluate the outcomes of the Implemented intrapartum guidelines to reduce preventable maternal deaths.

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) YOUR RIGHTS AS A RESEARCH PARTICIPANT

The decision to take part in the study is yours alone. You do not have to take part if you do not want to. Your participation in this trial is entirely voluntary and you can refuse to participate or stop at any time without stating any reason. If you refuse to take part in the study, this will not affect you in anyway.

8) ETHICS APPROVAL

This study was submitted to the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been granted by that committee. The study will follow the Declaration of Helsinki (last update: October 2013), which guides doctors on how to do research in people. The researcher can give you a copy of the Declaration if you wish to read it.

9) INFORMATION

If I have any questions concerning this study, I should contact: Research Supervisors: Prof I. Coetzee-Prinsloo Tel:071 158 9045 Email:Isabel.coetzee@upac.za and Dr M. Yazbek Tel:082 576 3558 Email:mariatha.yazbek@up.ac.za during office hours.

10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output. All records from this study will be regarded as confidential. Results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study. However, the records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the Research Ethics Committee. All of these people are required to keep your identity confidential. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records. All hard copy information will be kept in a locked facility in the safe at the University of Pretoria, for a minimum of 15 years and only the research team will have access to this information.

11) CONSENT TO PARTICIPATE IN THIS STUDY

I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study. I have also received, read and understood the above written information about the study. I had adequate time to ask questions and I have no objections to participate in this study. I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results. I understand that I will not be penalized in any way

should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care. I am participating willingly.

I have received a signed copy of this informed consent agreement.

Participant Name: _____

Participant Signature:_____ Date: _____

Researcher's Name: _____

Researcher's Signature: _____ Date: _____

Witness Name: _____

Witness Signature: _____ Date: _____

CONSENT FORM TO RECORD THE FOCUS GROUP INTERVIEWS

Phase Three: Report on the outcomes on the Implemented intrapartum guidelines to reduce preventable maternal deaths at s selected public hospital in Gauteng.

The researcher will provide the experts with a brief information guide in a pamphlet which will have the researcher contact details, research topic, the background, objectives, methods, data collection and ethical considerations and permission letters from Gauteng Department of Health and the hospital Chief Executive Officer to conduct the study.

The researcher will arrange the venue, date and time of the focus group interview in consultation with the participants. The Focus group interview will take place in a boardroom at a selected public hospital in Gauteng Province. The researcher will adhere to Covid-19 regulations during data collection, such as ensuring that all participants are wearing a mask and maintaining social distance. Semi- structured and agenda focused group interviews will be used to acquire in-depth views from the midwives on the implemented intrapartum Maternity Care Guidelines at the selected public hospital. .

Focus group interview questions

Adapted from: Proctor, Silmere, Raghavan et al (2011:66-71)

The following question will be asked to guide data collection of Phase Three.

Feasibility: How will you ensure that the intrapartum maternal guidelines are feasible at this selected public hospital in Gauteng?

Acceptability: How do you as midwives foster support among local stakeholders for the best implementation of intrapartum maternal guidelines at this selected public hospital in Gauteng province?

Appropriateness: Are these intrapartum care guidelines appropriate, efficient, and effective in reducing preventable intrapartum maternal deaths at this selected public hospital?

Adoption: How would you encourage midwives to use the intrapartum care guidelines at this selected public hospital?

Penetration: How can you attract other midwives to adopt the intrapartum maternal guidelines in the prevention of preventable intrapartum maternal deaths?
Sustainability: How can you ensure that these intrapartum care guidelines remain effectively implemented throughout the intrapartum period at this selected public hospital?

Sustainability: How can you ensure that these intrapartum care guidelines remain effectively implemented throughout the intrapartum period at this selected public hospital?

The researcher will fully participate, encourage the experts to talk and be interactive during the discussion, take field notes and audiotape the focus group interviews. Researcher will ask certain number of questions and pose additional probes depending on each participant's response.

Dear Prospective Participant.

Thank you very much for participating in the study.

Date	**Month**	**Year**

Name of the hospital: ……..
Occupation……..
Ward/unit you're working……..

PLEASE READ AND INITIAL EACH BOX

☐ I confirm that I've read and understand the participant information letter (Annexure F2

). I hereby give consent to my interviews, conducted as part of the above study to be audiotaped.

☐ I understand that my personal details and identifying data will be protected. The audio tapes used for recording my interviews will be kept highly confidential and will be destroyed three years after publication of the research.

☐ I have read this consent form and have been given the opportunity to ask question.

_____	_____	_____
Name of Participants	Signature of participant	Date
_____	_____	_____
Name of Researcher	Signature of participant	Date

Annexure G

Data collection (PIPI) clinical audit tool (Phase 1)

Makgoba Meldah Mokone

Annexure

ANNEXURE G

DATA COLLECTION (PPIP) CLINICAL AUDIT TOOL

Perinatal death detail

PPIP 3 Data Sheet

Health care facility: _____

Data sheet completed by: _____

Identification: _____ Date of delivery: dd/mm/yyyy Date of death: dd/mm/yyyy Birth weight: _____ g

Delivered: At this facility / At home / In transit / At another facility / Unknown — Please circle one

Maternal age: _____ yrs or Unknown

Parity: _____ or Unknown

Antenatal care: Yes / No / Unknown — Please circle one

Gestational age

_____ completed weeks or Unknown

Accuracy if GA known: Certain / Uncertain — Please circle one

Based on: ☐ Dates ☐ Ultrasound ☐ Clinical exam — Select one or more

Syphilis serology

Positive / Negative / Not done / Result not available — Please circle one

HIV serology

Positive / Negative / Not done / Result not available — Please circle one

Maternal obstetric condition

Code: _____

'Other' description: _____

Code: _____

'Other' description: _____

Condition at birth

Born alive
Stillborn, alive on admission
Fresh stillborn, dead on admission
Stillborn, admission status unknown
Macerated stillborn

Please circle one

Anti-retroviral drugs

Prophylactic / Long-term / Intrapartum / Type unknown / No ART / Unknown

Please circle one ONLY IF (+) HIV serology

Primary obstetric cause of death

Code: _____

'Other' description: _____

Avoidable factors

Code: _____ Possible Probable

'Other' description: _____

Code: _____ Possible Probable

'Other' description: _____

Code: _____ Possible Probable

'Other' description: _____

Code: _____ Possible Probable

'Other' description: _____

Code: _____ Possible Probable

'Other' description: _____

Single pregnancy / Multiple pregnancy

Please circle one

Final cause of neonatal death

Code: _____

'Other' description: _____

Annexure

Maternal death detail

PPIP 3Dala Sheet

Healih care facilily:

Dala sheelcompleledby:

Identification:

Dale oldeath:

Death occurred:

- Duringear pregnancy (less than20weeksgestation)
- In!he antenatalperiod
- Intrapartum
- Poslpartum
- Unkno'lin

Pleasecircleone

Obstetriccause oldeath

Cooe

Description if 'Other'

Final cause ofdeath

Code:

Description if'Other:

Code:

Descriptionii'Other:

Cooe

Descrlplionii'Other:

Annexure

Maternal Obstetric condition

Code	Description
0100	**No obstetric condition**
0101	Healthy mother
0200	**Colncidental conditions**
0201	Motor vehicle accident
0202	Other accidents
0203	Assault
0204	Rape
0205	Herbal medicine
0299	Other coincidental conditions
0300	**Medical and surgical disorders**
0301	Cardiac disease
0302	Endocrine disease
0303	GIT disease
0304	CNS disease
0305	Respiratory disease
0306	Haematological disease
0307	Genito-urinary disease
0308	Auto-immune disease
0309	Skeletal disease
0310	Psychiatric disease
0311	Neoplastic disease
0399	Other medical and surgical disorders
0400	**Non-pregnancy-related infections**
0401	PCP pneumonia
0402	Other pneumonia
0403	Tuberculosis
0404	Endocarditis
0405	Urinary tract infection
0406	Appendicitis
0407	Malaria
0408	Cryptococcal meningitis
0409	Other meningitis
0410	Kaposi's sarcoma

Annexure

0411	Toxoplasmosis
0412	Cholera
0413	Hepatitis
0414	Gastroenteritis
0415	Wasting syndrome
0416	Complications of antiretroviral therapy
0499	Other non-pregnancy-related infections
0500	**Extra-uterine pregnancy**
0501	Extra-uterine pregnancy
0600	**Pregnancy-related sepsis**
0601	Chorioamnionitis with ruptured membranes
0602	Chorioamnionitis with intact membranes
0700	**Obstetric haemorrhage**
0701	Abruption with hypertension
0702	Abruption without hypertension
0703	Placenta praevia
0704	Other APH not specified
0705	Ruptured uterus with previous c/s
0706	Ruptured uterus without previous c/s
0800	**Hypertension**
0801	Chronic hypertension
0802	Proteinuric hypertension
0803	Eclampsia
0804	HELLP
0805	Liver rupture
0806	Acute fatty liver
0807	Pregnancy-induced hypertension without proteinuria
0900	**Anaesthetic complications**
0901	Complications of general anaesthetic
0902	Complications of epidural anaesthetic
0903	Complications of spinal anaesthetic
1000	**Embolism**
1001	Pulmonary embolism

Annexure

1002	Amniotic nuid embolism
1100	**Acute collapse - cause unknown**
1101	Acute collapse - cause unknown

Annexure

Obstetric Cause of Perinatal Death

Code	Description
0100	**Spontaneous preterm labour**
0101	Ideopathic preterm labour
0102	Preterm premature rupture of membranes
0103	Preterm premature rupture of membranes with chorloamnionitis
0104	Preterm labour with chorioamnionitls with intact membranes
0105	Cervical incompetence
0106	Iatrogenic preterm delivery for no real reason
0200	**Infections**
0201	Syphilis
0202	Amniotic fluid infection
0203	Beta-haemolytic streptococcal infection
0204	Malaria
0205	AIDS/HIV related *** NOT USED ***
0299	Other infections
0300	**Antepartum haemorrhage**
0301	Abruptio placentae
0302	Abruptio placentae with hypertension
0303	Placenta praevia
0304	Antepartum haemorrhage *of* unknown origin
0400	**Intrauterine growth retardation**
0401	Idiopathic intrauterine growth retardation
0402	IUGR with histological features of ischaemic placental disease
0403	Postmaturity
0500	**Hypertensive disorders**
0501	Chronic hypertension
0502	Proteinuric hypertension
0503	Eclampsia
0504	Pregnancy-induced hypertension without proteinuria
0600	**Fetal abnormality**
0601	Fetal chromosomal abnormality
0602	Neural tube defects

Annexure

0603	Cardiovascular system abnormality
0604	Renal system abnormality
0605	Hydrocephalus
0606	Abnormality of multiple systems
0607	Non-immune hydrops fetalis
0608	No -specific fetal abnormality - FU<
0700	**Trauma**
0701	Motor vehide accident
0702	Accidental abdominal trauma
0703	Domestic violence
0704	Assault
0800	**Intrapartum asphyxia**
0801	Labour related intrapartum asphyxia
0802	Meconium aspiration
0803	Cord prolapse
0804	Cord around the neck
0805	Trauma·c breech delivery
0806	Traumatic assisteddelivery
0807	Shoulder dystocia
0808	Precipitous labour
0809	Rupturedуterus
0900	**Maternal disease**
0901	·a ernal diabees mellitus
0902	r- a ernal heart disease
0903	Maternal diseasedue to herbal medicine use
0999	O her maternal disease
1000	**Miscellaneous**
1001	Rhesus isoimmunisation
1002	T • in-to-tv in transfusion
1003	Extra-uterine preg ancy
1099	Other cause of dea not described in classific.a·on
1100	**Intrauterine death**
1101	U explainedintra terine dea h - fresh
1102	Unexplainedin:rauterine death - macerated

Annexure

1103	Unexplained IUD due to lack of notes
1200	**No obstetric cause / Not applicable**
1201	No obstetric cause/ Not applicable

Annexure

Flail! c,mscs of Neon11tol Pcilth

Code	Description
0100	**Inmrnturity related**
0101	Extreme multl·organ immaturity
0102	Hyaline membrane disease
0103	Necrotizing enterocolitis
0104	Pulmonary haemorrhage
0105	Intraventricular haemorrhage
0199	Other immaturity related causes
0200	**Hypoxia**
0201	Hypoxic ischaemic encephalopathy
0202	Meconium aspiration
0203	Persistent fetal circulation
0299	Other complications of hypoxia
0300	**Infection**
0301	Septicaemia
0302	Pneumonia
0303	Congenital syphilis
0304	HIV infection
0305	Congenital infection
0306	Group B streptococcal infection
0307	Meningitis
0308	Nosocomial infection
0309	Tetanus
0399	Other infection
0400	**Congenital abnormalities**
0401	Central nervous system abnormalities
0402	Cardiovascular system abnormalities
0403	Renal system abnormalities
0404	Alimentary tract abnormalities (excl. diaphragmatic hernia)
0405	Chromosomal abnormality
0406	Biochemical abnormality
0407	Respiratory abnormalities (incl. diaphragmatic hernia)
0499	Other congenital abnormalities (incl. multiple & skeletal)

Annexure

0500	**Traumrt**
050.\	Sub:iponcurotlc h:icmorrhage
os_g	Other tr.:iumJ
0600	**Miscellaneous**
0601	Isoirnmunisation
0602.	Non-hnrnune hydrops
060	Sudden Infant Death Syndrome (SIDS)
0604	Apnoeic attacks in the first week
0605	Haemorrhagic disease of the new-born
0506	Aspiration pneumonia
0607	Hypo oiaemic shock
050S	Hypothermia
0609	Hypoglycaemia
0699	Other cause of death not described in classification
0700	**Unknown cause of death**
0701	Unknown cause of death
0900	**Intrauterine death**
0901	Intrauterine death

Annexure

Avoidable Factors

Code	Description
0100	**Patient associated**
0101	Never initiated antenatal care
0102	Booked late in pregnancy
0103	Infrequent visits to antenatal clinic
0104	Failed to return on the prescribed date
0105	Inappropriate response to rupture of membranes
0106	Inappropriate response to antepartum haemorrhage
0107	Inappropriate response to poor fetal movements
0108	Delay in seeking medical attention during labour
0109	Delay in seeking help when baby ill
0110	Declines admission/treatment for personal/social reasons
0111	Partner/Family declines admission/treatment
0112	Alcohol abuse
0113	Smoking
0114	Illegal drug use
0115	Assault
0116	Attempted termination of pregnancy
0117	Infanticide
0118	Abandoned baby
0199	Other patient associated factors
0200	**Administrative problems**
0201	Lack of transport - Home to institution
0202	Lack of transport - Institution to institution
0203	Lack of adequate neonatal transport
0204	No syphilis screening performed at hospital / clinic
0205	Result of syphilis screening not returned to hospital/clinic
0206	No on-site syphilis testing available
0207	No Motherhood card issued
0208	No dedicated high risk clinic at referral hospital
0209	Inadequate facilities/equipment in neonatal unit/nursery
0210	Inadequate theatre facilities
0211	No accessible neonatal ICU bed with ventilator
0212	Inadequate resuscitation equipment
0213	Insufficient blood / blood products available
0214	Insufficient nurses on duty to manage the patient adequately

Annexure

0215	Insufficient doctors available to manage the patient
0216	Personnel not sufficiently trained to manage the patient
0217	Personnel too junior to manage the patient
0218	Staff rotation too rapid
0219	Anaesthetic delay
0220	Theatre delay: staff not available
0221	Theatre delay: all theatres occupied
0222	Congenital abnormality not diagnosed: No ultrasound service available
0299	Other administrative problems
0300	**Medical personnel associated**
0301	No response to history of stillbirths, abruptio etc.
0302	No response to maternal glycosuria
0303	No response to poor uterine fundal growth
0304	No response to maternal hypertension
0305	No response to positive syphilis serology test
0306	No response to apparent postterm pregnancy
0307	No response to history of poor fetal movement
0308	No antenatal response to abnormal fetal lie
0309	Multiple pregnancy not diagnosed antenatally
0310	Physical examination of patient at clinic incomplete
0311	GP did not give card/letter about antenatal care
0312	Medical personnel overestimated fetal size
0313	Medical personnel underestimated fetal size
0314	Fetal distress not detected antepartum; fetus monitored
0315	Fetal distress not detected antepartum; fetus not monitored
0316	Antenatal steroids not given
0317	Poor progress in labour, but partogram not used
0318	Poor progress in labour, but partogram not used correctly
0319	Poor progress in labour - partogram interpreted incorrectly
0320	Fetal distress not detected intrapartum; fetus monitored
0321	Fetal distress not detected intrapartum; fetus not monitored
0322	Breech presentation not diagnosed until late in labour
0323	Multiple pregnancy not diagnosed intrapartum
0324	Incorrect management of hypertensive disease
0325	Incorrect management of antepartum haemorrhage
0326	Incorrect management of premature labour
0327	Incorrect management of cord prolapse
0328	Iatrogenic delivery for no real reason

Annexure

0329	Management of 2nd stage: prolonged with no intervention
0331	Management of 2nd stage: inappropriate use of vacuum
0332	eonatal resusdtation inadequate
0333	eonatal care: inadequate monitoring
0334	Neonatal care: management plan inadequate
0335	Baby managed incorrectly at Hospital/Clinic
0336	Baby sent home inappropriately
0337	Delay in doctor responding to call
033s	Doctor did not respond to call
0339	Delay in medical personnel calling for expert assistance
034-0	Delay in referring patient for secondary/tertiary treatment
0341	Nosocomial infection
0342	Inadequate / No advice given to mother
0343	Congenital abnormality not diagnosed; U/S examination not performed
0344	Congenital abnormality not diagnosed; U/5 examination was performed
0399	Other medical personnel associated factors
04-00	Insufficient notes to comment on avoidable factors
04-01	Insufficient notes
04-02	File missing
0403	AI1tenatal card lost

Annexure

Primary causes of Maternal Death

Code	Description
0100	**No obstetric cause**
0101	Unspecified obstetric causes of death
0102	Assault
0103	Trauma
0104	Suicide
0105	Herbal medicine
0199	Other coincidental conditions
0200	**Pre-existing maternal disease**
0211	Undiagnosed cardiac disease
0212	Mixed mltral valve disease
0213	Other rheumatic heart disease
0214	Artificial valve complications
0215	Congenital heart disease
0216	Arrhythmias
0217	Cardiomyopathy
0219	Other cardiac disease
0221	Diabetes mellitus
0222	Thyroid disease
0229	Other endocrine disease
0231	Liver disease
0232	Intestinal disease
0233	Pancreatitis
0239	Other gastrointestinal disease
0241	Ccrcbrovascular accident
0242	Epilepsy
0249	Other central nervous system disease
0250	Respiratory disease
0251	Haematological disease
0252	Renal disease
0253	Genital disease
0254	Collagen disease
0255	Other immune disease
0260	Kyphoscolyosis
0261	Dwarfism
0262	Other skeletal disease

Annexure

0300	**Non-pregnancy related infections and AIDS**
0301	Pneumonia
0302	Acquired Immune Deficiency Syndrome (AIDS)
0303	Tuberculosis
0304	Bacterial endocarditis
0305	Pyelonephritis, urinary tract Infection
0306	Appendicitis
0307	Malaria
0308	Meningitis
0399	Other non-pregnancy related infections
0400	**Ectopic pregnancy**
0401	Ectopic pregnancy less than 20 weeks
0402	Extrauterine pregnancy (more than 20 weeks)
0500	**Abortion**
0501	Septic abortion
0502	Uterine trauma
0503	Trophoblastic disease
0600	**Pregnancy-related sepsis**
0601	Amniotic fluid infection with ruptured membranes
0602	Amniotic fluid infection with intact membranes
0603	Puerperal sepsis following normal delivery
0604	Puerperal sepsis following caesarean section
0605	Sepsis after normal delivery with obstructed labour present
0606	Sepsis after caesarean section with obstructed labour
0699	Other pregnancy-related sepsis
0700	**Antepartum haemorrhage**
0701	Abruptio placentae without hypertension
0702	Abruptio placentae with hypertension
0703	Placenta praevia
0799	Other antepartum haemorrhage
0800	**Postpartum haemorrhage**
0801	Retained placenta; placenta accreta, increta, percreta
0802	Uterine atony due to uterine overdistention

Annexure

0803	Uterine iltony due to prolonged labour
0804	Ruptured uterus with previous caesarean section
0805	Ruptured uterus without previous caesarean section
0806	Inverted uterus
0899	Other uterine trauma
0900	**Hypertensive disorders of pregnancy**
0901	Chronic hypertension
0902	Proteinuric hypertension
0903	Eclampsia
0904	HELLP syndrome
0905	Rupture of the liver
0906	Pregnancy-induced hypertension without proteinuria
1000	**Anaesthetic complications**
1001	Complications of general anaesthetic
1002	Complications of epidural block
1003	Complications of spinal block
1100	**Embolism**
1101	Pulmonary embolism
1102	Amniotic nuld embolism
1200	**Acute collapse - cause unknown**
1201	Acute collapse - cause unknown
1300	**Unknown**
1301	Death at home / outside health service
1302	No primary cause found

Annexure

Final causes of Maternal Death

Code	Description
0100	**Hypovolaemic shock**
0101	Hypovolaemic shock following postpartum haemorrhage
0102	Hypovolaemic shock following antepartum haemorrhage
0103	Hypovolaemic shock following ectopic pregnancy
0200	**Septic shock**
0201	Septic shock following an abortion
0202	Septic shock following a viable pregnancy
0203	Septic shock following an incidental infection
0300	**Respiratory failure**
0301	Adult respiratory distress syndrome
0302	Pneumonia (including Tuberculosis)
0303	Acute respiratory failure
0400	**Cardiac failure**
0401	Pulmonary oedema
0402	Cardiac arrest
0500	**Renal failure**
0501	Acute tubular necrosis
0502	Acute medullary necrosis
0600	**Liver failure**
0601	Liver failure following HELLP syndrome
0602	Liver failure following drug overdose
0700	**Cerebral complications**
0701	Intracerebral haemorrhage
0702	Cerebral oedema resulting in coning
0703	Meningitis/ infection (including Malaria)
0704	Cerebral emboli
0800	**Metabolic**
0801	Maternal ketoacidosis
0802	Thyroid crisis

Annexure

0900	**Disseminated Intravoscular coagulation**
0901	Di minatcd lntravnscular coag 1llon
1000	**Multi-organ failure**
1001	Mulli-org,m failure
1100	**Immune system fallutc**
1101	HIV/ AIDS
1200	**Unknown**
1201	Home death
1300	**Other cause of death**
1301	Other cause of death

Annexure H

Permission letter to use PPIP audit tool

ANNEXURE H

PEMISSION LETTER TO USE PPIP AUDIT TOOL

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

TEMBISA PROVINCIAL TERTIARY HOSPITAL
No.01 Cnr Flint Mazibuko and Rev. Namane Drive
Olifantsfontein
Tembisa
1632

Enquiries: DR Chisale-Mabotja
Telephone: 011-9235924

13th August 2021

TO WHOM IT MAY CONCERN:

Subject: Permission Letter

This letter serves to confirm that **Ms Mokone M. Meldah**, PhD Student at the University of Pretoria, Student no: **13243854,** has been officially granted permission to utilise the Perinatal Problem Identification Programme (PPIP) clinical audit to fulfil the purpose of her study.

Title of Research Project: **Multidisciplinary Strategies to Decrease Preventable Intrapartum Maternal Deaths at a Public Hospital in Gauteng.**

Approved/not approved/ approved with amendments

Name Surname: M Chisale-Mabotja
Designation: Clinical Manager Mother & Child
Date: 13/08/2021
Dr M. Chisale Mabotja

Annexure I

Letter from Statistician for Phase 1 descriptive data analysis

Makgoba Meldah Mokone

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Denkleiers • Leading Minds • Dikgopolo tša Dihlalefi

DEPARTMENT OF STATISTICS

LETTER OF STATISTICAL SUPPORT

Date: 7th December 2021

This letter is to confirm that **Makgoba Meldah Mokone (13243854)** studying at the University of Pretoria, discussed the project with the title **"Implementation of maternal guidelines to reduce preventable intra-partum deaths at a selected public hospital in Gauteng"** with me.

I hereby confirm that I am aware of the project and undertake to assist with the statistical analysis of the data generated. The study aims to implement maternity care guidelines to reduce preventable intrapartum maternal deaths at a public hospital in Gauteng.

Phase one, the phase in which the statistical support will be given, will focus on auditing the preventable intrapartum maternal deaths to investigate the possible causes. The purposive sample will consist of all 48 maternal deaths which occurred during the intrapartum periods and were recorded as preventable.

The data analysis will consist of descriptive statistics such as mean, median, standard deviations, frequencies, proportions, etc., to describe the results, and graphical representations can be made where applicable to assist in visualising aspects of the data. This is a descriptive study with a specific focus on identifying possible causes of these deaths.

Ms. Gopika Ramkilawon
Senior Research Consultant
Department of Statistics
Internal Statistical Consultation Service
gopika.ramkilawon@up.ac.za

Annexure J

Invitation letter for consensus workshop (Phase 2)

Makgoba Meldah Mokone

ANNEXURE J

INVITATION LETTER FOR CONSENSUS WORKSHOP (PHASE 2)

92 Swarthout Street
Birchleigh
Kempton Park
1618

Enquiries: Ms Meldah Mokone
Telephone: 083 472 3614
Email: mokonemeldah@yahoo.co.za
Date: 31st October 2022

TO: **Tembisa Provincial Tertiary Hospital: Hospital Chief Executive Offices, Obstetrics and Gynaecology Department, Clinical managers, Assistant Managers, Head of Department, Operational Managers, Staff Development and Quality Assurance, Midwives and Midwife Specialists.**

FROM: Ms Mokone MM

SUBJECT: WORKSHOP FOR DATA COLLECTION FOR IMPLEMENTATION OF MATERNITY GUIDELINES

---

1. Purpose:

To request permission to hold a workshop to discuss the implementation of maternity guidelines to reduce preventable intrapartum maternal deaths at a selected public hospital in Gauteng province.

Date: 25th November 2022

Time: 08h30

Venue: Conference Centre

2. Background

I am a PhD student at University of Pretoria, Department of Nursing Science under the supervision of Prof I. Coetzee-Prinsloo and Prof M. Yazbek. The study titled: **IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA-PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG** has been granted permission by the University of Pretoria Research Ethics Committee, National and Gauteng

Department of Health and the Chief Executive officer from the selected public hospital and clinical managers (See attached permission letters)

The workshop will be conducted upon receipt of the participant consent. I intend to publish the findings of the study in a professional journal and/or to present them at professional meetings like symposia, congresses, or other meetings of such a nature.

Ethical principles will be adhered to e.g. privacy and confidentiality. The personal identity of the participants will be protected by assigning each individual a random code number.

There will be no disruption of services during the workshop. The workshop will last approximately for about two hours.

If you have any queries concerning this research study, you are welcome to contact the following people: Meldah Mokone on 083 472 3614 Email: mokonemeldah@yahoo.co.za; Research Supervisors: Prof I. Coetzee-Prinsloo Email: Isabel.coetzee@upac.za and Prof M. Yazbek Email: mariatha.yazbek@up.ac.za.

Your cooperation will be highly appreciated
Best regards

Meldah Mokone
Signature: _____
Date: 31st October 2022

Annexure K

Agenda for the workshop (Phase 2)

Makgoba Meldah Mokone

ANNEXURE K

AGENDA FOR THE WORKSHOP (PHASE 2)

WORKSHOP

IMPLEMENTATION OF MATERNITY CARE GUIDELINES TO REDUCE PREVENTABLE INTRA- PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

Date: 25th November 2022

Time: 08h00

Venue: Selected Public Hospital in Gauteng

CHAIRPERSON:Prof Coetzee-Prinsloo SCRIBER:Ms Mokone

NO	TIME	ITEM	RESPONSIBLE PERSON
1	**08H30-08H35**	Opening and welcome	Ms Mokone
2	**08H35-08H45**	Introduction and purpose of the workshop	Prof Coetzee-Prinsloo Prof Yazbek
3	**08H45-08H50**	Credentials/apologies	
5	**09H00-09H10**	Matters arising	All participants
6	**09H10-09H05**	Adoption of agenda	
7	**09H05-09H30**	**7.1 Phase One: Audit of preventable intrapartum maternal deaths.** - Presentation of finding/results from phase one of the study	Ms Mokone
8	**09H30-09H45**	**Tea break**	
9	**09H45-10H15**	**Phase Two: The implementation of intrapaturm guidelines to reduce preventable maternal deaths.** - Presentation of proposed maternal guidelines to reduce preventable intrapartum maternal deaths	Ms Mokone
10	**10H15-10H50**	**Discussion and reaching consensus on the maternal guidelines to be implemented at a selected public hospital in Gauteng**	All participants
11	**11H50-12H00**	Discussion of general matters	
12	**10H50-10H55**	Announcement	
13	**10H55-11H00**	Closure	Prof Coetzee-Prinsloo

PROPOSED MATERNITY CARE GUIDELINES TO BE IMPLEMENTED TO REDUCE PREVENTBALE INTRAPARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

Summary of the findings from Phase One: Audit of Preventable Intrapartum Maternal Deaths.

PRIMARY CAUSE OF DEATHS	FINAL CAUSE OF DEATH	PROPOSED MATERNITY GUIDELINES
Uterine atony due to prolonged labour • Poor progress in labour but partogram not used • Poor progress In labour but partogram not used correctly	PPH/Hypovolemic shock	The use of patogram during the intrapartum period
Retained placenta	PPH/Hypovolemic shock Multiorgan failure	• Management of fourth stage of labour • Management of retained placenta • Management of PPH
Hypertensive disorders in pregnancy	HELLP syndrome Multiorgan failure	Management of hypertensive disorders in pregnancy/intrapartum period • Chronic hypertension • Pregnancy induced hypertension • Eclampsia
Obstetric haemorrhage	APH/Hypovolemic shock Disseminated intravascular coagulation	Management of obstetric haemorrhage • Placenta praevia • Placenta abruption
Uterine rupture with previous cesarean section	Multiorgan failure	Management of patient awaiting for cesarean section in labour
Covid Pneumonia	Acute respiratory failure	Management of Acute respiratory failure /maternal collapse

Compiled by Mokone Meldah

Annexure L

Presentation of results/slides (Phase 2)

Makgoba Meldah Mokone

ANNEXURE L

PRESENTATION OF RESULTS (PHASE 2)

IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA- PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG PROVINCE

Research proposal for the degree doctor of philosophy

Student name: Makgoba Meldah Mokone

Student number: 13243854

Supervisor: Prof I. Coetzee-Prinsloo

Co-supervisor: Prof M. Yazbek

25th November 2022

INTRODUCTION AND BACKGROUND / LITERATURE REVIEW

- Maternal death during pregnancy, childbirth and postpartum is a tragedy with catastrophic impact on families and serves as an important indicator of a health care system (Ai-ris and Rose, 2019:e562).
- More than one third of maternal death occur during intrapartum period and the majority of these deaths are largely preventable through monitoring of labour and childbirth, early identification, timely intervention and treatment of complications (World Health Organisation (WHO), 2020:1)
- Intrapartum refers to the period from the commencement of true labour, characterised by painful uterine contractions until the first hour after child birth (WHO, 2018:3).

INTRODUCTION AND BACKGROUND / LITERATURE REVIEW CONT....

- The global maternal mortality ratio in 2017 was estimated at 211 maternal deaths per 100,000. live birth.

- According to the WHO, UNICEF, World Bank Group and the United Nations Population Division (2019:13), Sub-Saharan Africa and Southern Asia accounted for approximately 86% (254 000) of the estimated global maternal deaths in 2017.

- The Sustainable Developmental Goal Three (SDG3), target 3.1 aims at reducing the preventable global and national maternal deaths rates by 70 and 140 per 100,000 live birth by the year 2030 respectively

PROBLEM STATEMENT

- Death of women during pregnancy, childbirth and puerperium remain a major public issue, particularly in low and middle income countries such as South Africa (Moodley, Fawcus & Pattinson, 2018:s4).
- Ending preventable maternal death (PMD) remains an unfinished agenda and one of the world's most critical challenges despite significant progress over the past decade (WHO 2015:2).
- The maternal mortality ratio for South Africa, Gauteng Province and Ekurhuleni Metropolitan for the 2017-2019 triennium was 113.8, 123,14, and 148,55 maternal deaths per 100 000 live births respectively (DoH, 2020:56).
- The causes of preventable intrapartum maternal death in South Africa were anaesthetic related 93,3%, obstetric haemorrhage, 89,5%, pregnancy related sepsis 76,4%, ectopic pregnancy 75,2% and hypertensive disorders in pregnancy 70,6% and miscarriage 64,9% (NDoH, 2020:34).

PROBLEM STATEMENT CONT....

- The causes ranged from poor patient assessment, missed or delayed diagnoses, failure to detect problems such as prolonged labour, post-partum haemorrhage, substandard care such as failure to follow guidelines and protocols, delayed decision making.
- Inadequate response and lack of skills during obstetric emergencies and resuscitation was identified as the major concern e.g. maternal collapse, antepartum haemorrhage, and pre-eclampsia (NDoH, 2020:34)..
- Action is necessary across health sectors and setting to decrease preventable intrapartum maternal deaths and this requires effective strategies and interventions.

RESEARCH QUESTION(S), AIM AND OBJECTIVES

3.1 Research question

- The research questions that emerged from the background and the problem statement are:
- What are the factors contributing to preventable intrapartum maternal deaths at a selected public hospital in Gauteng
- Which intrapartum guidelines can be implemented to reduce preventable maternal deaths at a selected public hospital in Gauteng?
- What are the outcomes of the implemented intrapartum guidelines to reduce preventable maternal deaths at the selected public hospital in Gauteng?

RESEARCH QUESTION(S), AIM AND OBJECTIVES / HYPOTHESIS CONT.....

3.2 Aim of the study

- The aim of the study is to implement intrapartum guidelines to reduce preventable maternal death in a selected public hospital in Gauteng.

3.3 Objectives of the Study

- The research objectives guiding this study:
- To determine the factors contributing to preventable intrapartum maternal deaths at public hospital in Gauteng
- To implement intrapartum guidelines to reduce preventable maternal deaths at a selected public hospital in Gauteng.

CONTEXT / SETTING AND DELINEATION

- The study will be conducted at a selected public hospital in Gauteng province, South Africa.
- The hospital was established in 1972, and is situated in Tembisa Township, Ekurhuleni Metro in the North sub-district.
- The hospital has a busy maternity department and gets referrals from 34 local clinics, two community health care Centres, and three midwife obstetric units. The total number of normal deliveries would be +-45 deliveries per day.

RESEARCH METHOD
Phase One: Audit of Preventable Intrapartum Maternal Deaths

- **Unit of analysis**. Document analysis of the preventable maternal deaths that has occurred in the labour unit at a selected public hospital in Gauteng.
- **Sampling method**: A purposive sampling technique
- **The sample size** : 38 preventable maternal deaths documents analysis that has occurred between 2018 – 2021.
- **Data collection**: Perinatal Problem Identification Programme (PPIP) clinical audit tool (Annexure B2),.
- **Data analysis**: Descriptive statistics
- **Rigor/Quality control:** validity and reliability criterion. Validity refers to the ability of an instrument to measure what is intended to measure, unbiased and well-grounded

PRIMARY CAUSE OF DEATH

	DataA (N = 48)
Uterine atony due to prolonged labour	3 (6.2%)
Retained placenta	8 (16.7%)
Eclampsia	5 (10.4%)
Covid Pneumonia	11 (22.9%)
HELLP syndrome	4 (8.3%)
Placenta Praevia	1 (2.1%)
Pulmonary Embolism	5 (10.4%)
Ruptured uterus with previous C/S in labour	5 (10.4%)
Abruptio placenta without hypertension	2 (4.2%)
Sepsis after normal delivery with obstructed labour	2 (4.2%)
Herbal medicine	2 (4.2%)

FINAL CAUSE OF DEATH

Hypovolemic shock from PPH	12 (25.0%)
HELLP syndrome	1 (2.1%)
Acute Medulary Necrosis	1 (2.1%)
Cardiac arrest	7 (14.6%)
Multiorgan failure	5 (10.4%)
Acute respiratory failure(Near miss)	1 (2.1%)
Disseminated intravascular coagulation	1 (2.1%)
Acute respiratory failure	12 (25.0%)
Hypovolemic shock from APH	5 (10.4%)
Hypovolemic Shock following PPH	1 (2.1%)
Septic shock from viable pregnancy	2 (4.2%)

Patient Associated Factors

Never initiated antenatal care Yes	14 (100.0%)
NA	34 (70.8%)
Attempted termination of pregnancy/ illegal drug use Yes	6 (100.0%)
NA	42 (87.5%)
Infrequent visit to antenatal care Yes	5 (100.0%)
NA	43 (89.6%)
Delay seeking medical attention during labour Yes	11 (100.0%)
NA	37 (77.1%)
Declines admission/ treatment for social reason Yes	9 (100.0%)
NA	39 (81.2%)
Inappropriate response to antenatal haemorrhage Yes	3 (100.0%)
NA	45 (93.8%)

Administrative Factors

No accessible icu bed with ventilator Yes	11 (100.0%)
NA	37 (77.1%)
Inadequate resuscitation equipment Yes	4 (100.0%)
NA	44 (91.7%)
insufficient blood product available Yes	5 (100.0%)
NA	43 (89.6%)
Insufficient nurses on duty to manage the patient adequately Yes	19 (100.0%)
NA	29 (60.4%)
insufficient doctor to manage the patient Yes	12 (100.0%)
NA	36 (75.0%)
Personnel not sufficiently trained to manage the patient Yes	8 (100.0%)
NA	40 (83.3%)
Inadequate theatres available Yes	20 (100.0%)
NA	28 (58.3%)

Medical Personnel Associated

Poor progress in labour but partogram not used Yes	8 (100.0%)
NA	40 (83.3%)
Poor progress In labour but partogram not used correctly Yes	10 (100.0%)
NA	38 (79.2%)
Incorrect management of hypertensive disease Yes	7 (100.0%)
NA	41 (85.4%)
Management of second stage prolonged with no intervention Yes	7 (100.0%)
NA	41 (85.4%)
Management plan inadequate Yes	16 (100.0%)
NA	32 (66.7%)
Insufficient notes Yes	10 (100.0%)
NA	38 (79.2%)

PRIMARY CAUSE OF DEATHS	FINAL CAUSE OF DEATH	PROPOSED MATERNITY GUIDELINES
Uterine atony due to prolonged labour • ***Poor progress in labour but partogram not used*** • ***Poor progress In labour but partogram not used correctly***	PPH/Hypovolemic shock	The use of patogram during the intrapartu period
Retained placenta	PPH/Hypovolemic shock Multiorgan failure	• Management of fourth stage of labour • Management of retained placenta • Management of PPH

PRIMARY CAUSE OF DEATHS	FINAL CAUSE OF DEATH	PROPOSED MATERNITY GUIDELINES
Hypertensive disorders in pregnancy	HELLP syndrome Multiorgan failure	Management of hypertensive disorders in pregnancy/intrapartum period • Chronic hypertension • Pregnancy induced hypertension • Eclampsia
Obstetric haemorrhage	APH/Hypovolemic shock Disseminated intravascular coagulation	Management of obstetric haemorrhage • Placenta praevia • Placenta abruption
Uterine rupture with previous cesarean section	Multiorgan failure	Management of patient awaiting for cesarean section in labour
Covid Pneumonia	Acute respiratory failure	Management of Acute respiratory failure /maternal collapse

Thank you

Annexure M

Poster during implementation of Maternity Care Guidelines (Phase 2)

Makgoba Meldah Mokone

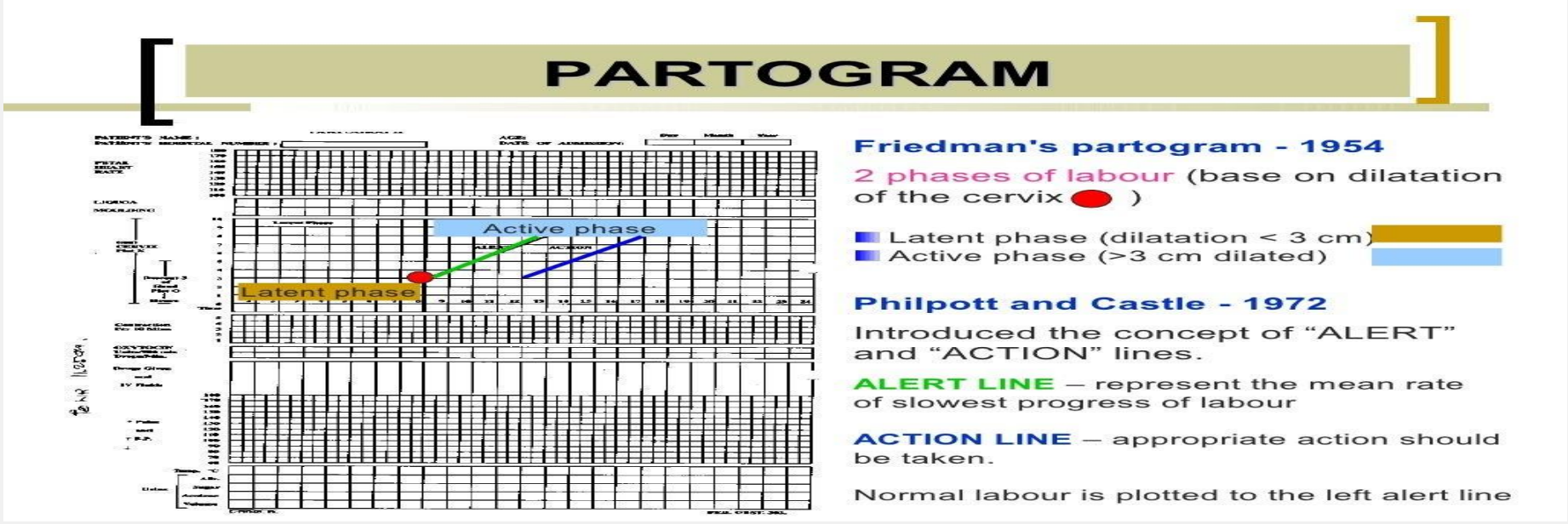
ANNEXURE M2

PHASE TWO POSTERS

PHASE 2: Implementation of Maternity Care Guidelines

PARTOGRAM

LET'S ALL USE PATORGRAM DURING THE INTRPARTUM PERIODS, REMEMBER THE BENEFITS!!!!!



***N.B** REFER TO THE MANAGEMENT OF HYPERTENSVE DISODERS IN THE GUIDELINES FOR MATERNITY CARE IN SOUTH AFRICA (2016) AT THE NURSES STATION CHAPTER 5 PAGE:47-49. PLEASE, ALSO CHECK ON THE EDUCATIONAL NOTICE BOARDS IN LABOUR WARD.*

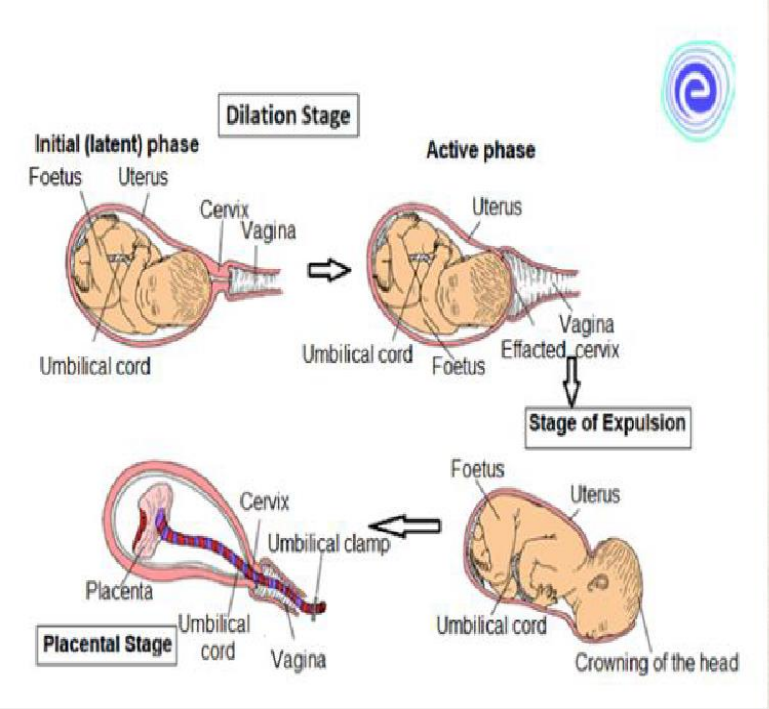
MANAGEMENT OF HYPERTENSIVE DISORDER

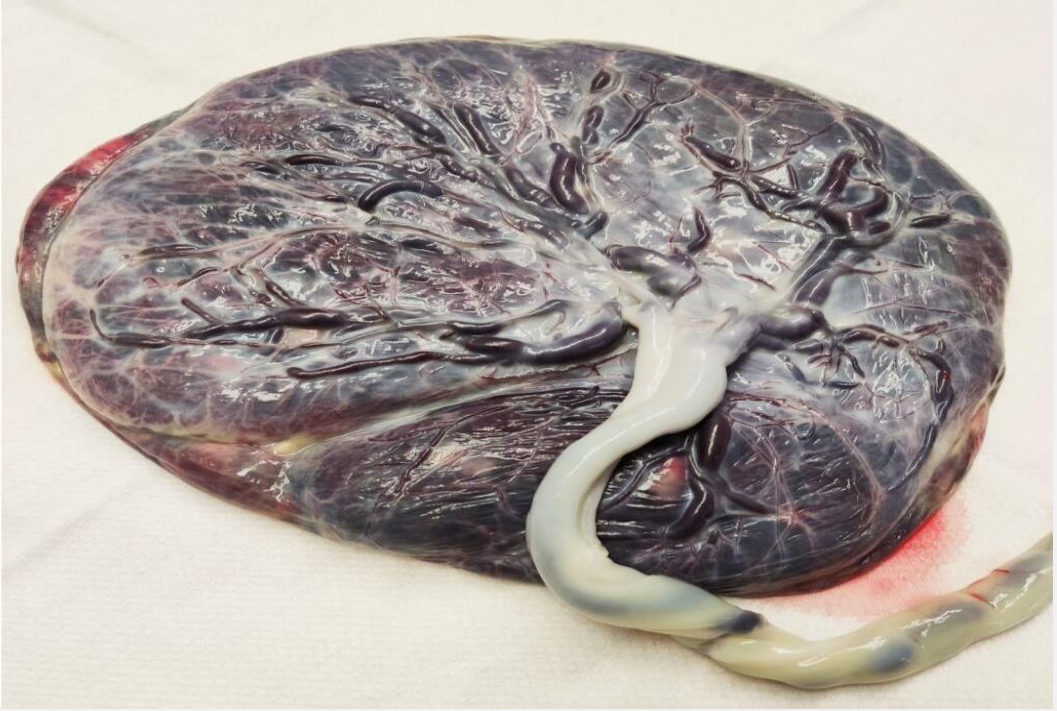
HYPERTENSIVE DISORDERS REMAINS A LEADING CAUSE SEVERE MORBIDITY & MATERNAL MORTALITY

***N.B** REFER TO THE MANAGEMENT OF HYPERTENSVE DISODERS IN THE GUIDELINES FOR MATERNITY CARE IN SOUTH AFRICA (2016) AT THE NURSES STATION CHAPTER 8 PAGE:83-90. PLEASE ALSO CHECK ON THE EDUCATIONAL NOTICE BOARDS IN LABOUR WARD.*

OBSTETRIC HAEMORHAGE FROM RETAINED PLACENTA

OBSTETRIC HAEMORHAGE IS ANOTHER LEADING CAUSE SEVERE MORBIDITY & MATERNAL MORTALITY





***N.B** REFER TO THE MANAGEMENT OF RETAINED PLACENTA IN THE GUIDELINES FOR MATERNITY CARE IN SOUTH AFRICA (2016) AT THE NURSES STATION CHAPTER 5 PAGE:59-63. ALSO CHECK ON THE EDUCATIONAL NOTICE BOARDS IN LABOUR WARD.*

Annexure N

Letter from language editor

Makgoba Meldah Mokone

ANNEXURE N

LETTER FROM LANGUAGE EDITOR

Cell/Mobile: 073-782-3923

53 Glover Avenue
Doringkloof
0157 Centurion

1 January 2023

TO WHOM IT MAY CONCERN

I hereby certify that I have edited Makgoba Meldah Mokone's doctoral dissertation, **Implementation of maternal care guidelines to reduce preventable intrapartum deaths at a selected public hospital in Gauteng**, for language and content.

IM Cooper

Iauma M Cooper
192-290-4

Annexure O

Declaration

ANNEXURE O

DECLARATION

DECLARATION OF ORIGINALITY

UNIVERSITY OF PRETORIA

The Department of **Nursing Sciences** places great emphasis upon integrity and ethical conduct in the preparation of all written work submitted for academic evaluation.

While academic staff teaches you about referencing techniques and how to avoid plagiarism, you too have responsibility in this regard. If you are at any stage uncertain as to what is required, you should speak to your lecture before any written work is submitted.

You are guilty of plagiarism if you copy from another's work (example: a book, an article or website) without acknowledge the source and pass it off as your own. In effect you are stealing something that belongs to someone else. This is only the case when you copy work word- for word (verbatim), but also when you submit someone's work in a slightly altered form (paraphrase) or use a line of argument without acknowledging it. You are not allowed to use work previously produced by another student. You not allowed letting anybody copy your work with the intention of passing if off as his/her work.

Students who commit plagiarism will not be given any credit for plagiarized work. The matter may also be referred to the Disciplinary Committee (students) for a ruling. Plagiarism is regarded as a serious contravention of the University

The declaration which follows must accompany all written work submitted while you are a student of the Department **of Nursing Sciences.** No written will be accepted unless the declaration has been completed and attached.

Full names of student: Makgoba Meldah Mokone

Student number: 13243854

Topic of work: Research Proposal:

I declare that the research reported in this proposal:

IMPLEMENTATION OF MATERNAL GUIDELINES TO REDUCE PREVENTABLE INTRA-PARTUM DEATHS AT A SELECTED PUBLIC HOSPITAL IN GAUTENG

1. I understand what plagiarism is and am aware of the University's policy in this regard.

2. I declare that this research proposal is my own original work. Where people's work has been used (either from a printed source, internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.

3. I have not used work previously produced by another student or any person to hand in as my own.

4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing off as his/her own work.

Signature: Meldah Mokone

Date: 28th July 2021

Annexure P

Phase 2: Workshop Transcription

Makgoba Meldah Mokone

PHASE 2: WORKSHOP TRANSCRIPTION

Verbatim transcription of the participants' audio-taped views of the workshop

Date: 25/11/2023

Starting time of interview:

Concluding time of interview:

Duration of the interview:

Location of the interview:

Interview topic: Evaluation of how participants felt about the implementation of maternal guidelines to reduce preventable intrapartum maternal deaths

Researcher: How do you feel about the workshop?

Research Supervisor: Thank you very much. What I liked the least was that we do not do this often enough and I wish we could do this more often. This is a good way of sharing information, coming up with best midwifery practices. What I liked the most was really to see the enthusiasm, the sharing and knowledge generation.

Research Co-supervisor: I don't have anything that I liked the least, but I think it was wonderful to actually obtain the knowledge from you because you are going to be the role players in clinical practice and you're going to save the lives of mothers and babies.

Researcher: Yes. Participants, please share your experience of this workshop with us.

Participant 1: Ohhhh… it was nice, everybody was happy. I could learn anything that I didn't understand. Every answer was correct as we had common goals of choosing maternal guidelines that could improve care. I will do my best when I go back to my ward.

Researcher: Thank you participant 1 for sharing your experience. Let's hear the experience from Participant 2.

Participant 2: I mostly enjoyed the group discussion, mmm, about the maternal death guidelines that could possibly reduce preventable maternal deaths. I enjoyed and learned from this information session.

Researcher: Thank you participant 2. Let's move to Participant 3.

Participant 3: I also liked the group discussion. It was an eye opener for me, actually. I'm going to do my best when I go back to the ward.

Researcher: Thank you. Let's hear the next participant.

Participant 4: To me this was a teachable moment. I recognised and realised that in most cases when we are invited to attend in-service training, we usually say we are busy, forgetting that that 5 minutes can make a difference if we only listen to what we are taught about.

Researcher: Thank you participant 4. Let's hear participant 5, the Accoucher in this workgroup.

Participant 5: Oh, thank you to all the professors in this workshop and thank you to the researcher for this opportunity. We have learned a lot and had a very nice experience. What I would like to make as a challenge to the researcher, let it not be done for the sake of the study or to obtain a degree, but let it be the start of good practices in midwifery care. Let's form journal clubs to discuss and share good practices from other researches that have been done so it can yield good results because at the end of the study, it is not just to get the qualification but that we have quality care and we are able to implement the scientific evidence that we've found so we can improve in terms of the care of patient, and not only in this institution because this study will be shared internationally.

Researcher: Mmm…..Thank you very much participant 5. Over to you participant 6, let's hear your experience.

Participant 6: OK, what I liked about this session was the group discussions and the information sharing. That was a refresher through this discussion. I would like to see this kind of session happen more often. We never had workshops like this. The thing that I did not like was the duration of the workshop, we had a lot to discuss, teach and learn from each other.

Researcher: Thank you participant 6. Over to you, participant 7. Tell us about your experience from this work group.

Participant 7: First, I would like to thank you for creating this opportunity for us. It was eye opening, especially with the statistics that you presented, because we usually take them for

granted. You only hear when they say there is a maternal death but you don't know the impact. So let's take this to our unit and improve on the services that we render to women.

Researcher: Thank you so much. Over to you participant 8.

Participant 8: Personally I joined the discussion and saw the information that was collected on the maternal deaths. This was able to show us on where we are lacking so we could go and work on those areas. Thank you.

Researcher: Thank you and over to participant 9.

Participant 9: It was very interesting to know the maternal deaths stats that we have in maternity. It was refreshing for me and I enjoyed the teaching with my fellow colleagues. Thank you very much, Researcher.

Researcher: Thank you very much. Let's hear from the next participant:

Participant 10: I'm happy to be part of the discussions, especially about the causes of preventable maternal deaths. I'm hoping that from what we've learned from this session it will help to prevent and reduce the preventable maternal deaths.

Researcher: Thank you and over to the next participant.

Participant 11: The session was very educational. I thank you very much for the opportunity, for the teaching on the causes of maternal deaths, and that most of these maternal deaths are preventable. So thank you very much. Thank you for the sweets (other participants, researcher, and research supervisors smiling and laughing)

Researcher: Thank you and let us hear the next participant.

Participant 12: I just want to thank our professors, and our mothers for coming through, for taking their time to come and teach and guide us. This is actually my first workshop at this public hospital as I just completed the community service. I've learned a lot today because I learned most of the things from my senior midwives that I work with but sometimes they do not get time to teach and show us midwifery care. but today they were able to discuss some of the things that are not easy in the ward because of the shortage of staff. In the ward, we are running around and it will be easy for me to apply whatever we were discussing, so this workshop comes as a refresher informational session.

Researcher: Thank you participant 12. Let's hear the next participant.

Participant 13: They have already mentioned most of the things we learned today. It was quite informative. Thank you

Researcher: Once again, thank you all your contributions in sharing your experience. From my side, I am taking this opportunity to appreciate the effort from this team. You really worked so hard and I am impressed, especially under the conditions in which you work. You had to leave the patients to come and attend this session. We were not doing it for the researcher or the supervisors, we were doing it to bring change, to transform our obstetric unit into a better one. We are here to reduce morbidities, and mortalities and most importantly I really liked your participation. It was so informative, I'm very impressed. To my research supervisors, thank you very much. You drove all the way from the University of Pretoria in this bad weather to come and honour this work. Once again, thank you to all participants, who have honoured the invitation despite the extreme staff shortages. This study is going to benefit the patients and us as clinicians. Let us take the information and go and share it with our other colleagues. Let's take all the information and maternal guidelines and implement them in our units and evaluate them after 6 months. Let's maintain and sustain the quality care so we continue to render quality maternal health care services. I wish it was the whole day workgroup, where we would have another session. Thank you and over to the workshop facilitator.

Supervisor: Thank you very much and I see that all the participants are sitting and flowing together. Thank you very much for your participation, we really appreciate your time. Thank you once again.