

**MIDWIVES' COMPLIANCE WITH GUIDELINES FOR PREVENTION AND  
MANAGEMENT OF POSTPARTUM HAEMORRHAGE IN KATETE DISTRICT  
EASTERN PROVINCE, ZAMBIA**

**By**

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**A DISSERTATION SUBMITTED TO THE UNIVERSITY OF ZAMBIA IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF  
SCIENCE IN MIDWIFERY, WOMEN AND CHILD HEALTH**

**UNIVERSITY OF ZAMBIA**

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**JULY, 2020**

**DECLARATION**

I **Monica S.B Zimba**, declare that this work being submitted in partial fulfilment of the requirement for the award of **Master of Science Degree in Midwifery, Women and Child Health** at the University of Zambia is as a result of my own efforts. The various sources to which I am indebted to are clearly indicated in the text and references. This work has neither fully nor in part been submitted for any other degree, examination nor to any other university or institution.

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## ABSTRACT

Postpartum haemorrhage (PPH) has remained top among the causes of maternal mortality in Sub-Saharan Africa, and is the direct cause of 34% of maternal mortalities in Zambia. The World Health Organisation (WHO) provides evidence-based interventions to reduce maternal mortality which focus on prevention, treatment and management of PPH. Despite these interventions, Katete district has in the past four years registered an average of 55% PPH related mortalities. This study aimed at determining midwives' compliance to guidelines for prevention and management of PPH in Katete district, Zambia. A cross sectional study design involving 36 midwives from 13 health facilities was utilised for the study. Using multistage sampling, health facilities were stratified into health posts, health centres, zonal health centres and hospitals, followed by purposive sampling to select the particular health facilities. Simple random sampling was used to select midwives in facilities with more than one midwife while convenience sampling was used in facilities with a single midwife. A self-administered questionnaire and an observational checklist were used to collect data, which was analysed using Statistical package for Social Sciences version 23.0. Logistic regression analysis, Chi-square test and Fisher's Exact test were used to determine the relationship among variables. Eleven out of the 13 health facilities had inadequate resources. Compliance to PPH prevention and management guidelines was poor in 64% of the midwives; 61% of the midwives exhibited high knowledge in PPH prevention and management guidelines, while 66.7% showed poor practices in the management of PPH. Compliance was significantly associated with practices ( $P$ -value=0.001) but not with knowledge ( $p$ -value=0.968) or availability of resources ( $P$ -value=0.464). Compliance was 1.556 times higher among those aged 36-50 years, 1.667 times more likely among female midwives and 1.857 times more likely among Registered Midwives (RMs). Midwives with a shorter length of service (2-5 years) were three times more likely to comply with PPH prevention and management guidelines. Compliance increased 1.8 times among midwives with high knowledge and five times more among midwives with good practices. Midwives from facilities with inadequate resources were 1.778 times more likely to comply to PPH prevention and management guidelines. There were poor practices in the prevention and management of PPH among midwives in Katete District because they were not complying with the guidelines. This was despite their knowledge levels being high.

**Keywords:** Compliance, Guidelines, postpartum haemorrhage, Prevention, Management.

## **DEDICATION**

This study is dedicated to my loving husband, Raban Chibeka and wonderful children; Mercy, Nelson and Laban Chibeka for their encouragements. You are very special. I also dedicate this research work to my parents, Wyness and Herbert as well as my sister Leah and brother Felix for their support throughout the process. I further dedicate this work to my late sister; Patricia who died before completion of the study, for being my pillar in all my endeavours. I will never forget you.

## **ACKNOWLEDGEMENTS**

I thank the Almighty God for giving me an opportunity to undertake this study and for seeing me this far in my academic goals. I am short of words in expressing my sincere homage of praise for this tremendous grace rendered.

I further appreciate my supervisors' professional, immeasurable advice and critical analysis during the time I was working on the Dissertation. I am greatly indebted to Dr. Kwaleyela, Ms. Mayimbo, Mrs. Brenda Sianchapa, Mr. Y. Banda and all those who helped in several ways in the preparation of this work. I also wish to thank the faculty for the school of nursing sciences post graduate for the academic guidance pertaining to research in general and writing the dissertation.

Finally, I sincerely acknowledge the support of my employers, family and friends and everyone that rendered a hand in fruition of this endeavour.



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## **LIST OF ABBREVIATIONS**

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>AMSTL</b>	Active management of third stage of labour
<b>CCT</b>	Controlled Cord Traction
<b>CSO</b>	Central Statistical Office
<b>DHO</b>	District Health Office
<b>DMO</b>	District Medical Office
<b>EPHO</b>	Eastern Province Health Office
<b>EmOC</b>	Emergency Obstetric Care
<b>EmONC</b>	Emergency Obstetric and Neonatal Care
<b>FANC</b>	Focused Antenatal Care
<b>GNC</b>	General Nursing Council
<b>GRZ</b>	Government of the Republic of Zambia
<b>HIMS</b>	Health Information Management System
<b>HIV</b>	Human Immune Virus
<b>HMS-BAB</b>	Help Mothers Survive Bleeding after Birth
<b>IEC</b>	Information Education and Communication
<b>IM</b>	Intramuscular
<b>IRH</b>	Integrated Reproductive Health
<b>IU</b>	International unit
<b>IV</b>	Intravenous
<b>MCH</b>	Maternal Child Health

<b>MoH</b>	Ministry of Health
<b>PHD</b>	Provincial Health Director
<b>PPH</b>	Postpartum Haemorrhage
<b>RMNCH</b>	Reproductive Maternal, Neonatal and Child Health
<b>SDGS</b>	Sustainable Development Goals
<b>SIDA</b>	Swedish International Agency
<b>SMAGS</b>	Safe motherhood groups
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>TBA</b>	Traditional Birth Attendant
<b>UN</b>	United Nations
<b>UNZABREC</b>	University of Zambia Biomedical Research Ethics Committee
<b>USA</b>	United States of America
<b>WHO</b>	World Health Organisation
<b>ZDHS</b>	Zambia Demographic Health Survey



## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Introduction**

Postpartum haemorrhage (PPH) is excessive bleeding from the genital tract of more than 500mls of blood after vaginal delivery, or 1000mls after caesarean section or any blood loss enough to cause hemodynamic instability, occurring within 24 hours (primary PPH) or 24 hours to six weeks (secondary PPH) (Rani, 2017). PPH has remained top among the causes of maternal mortality in the Sub-Saharan Africa region (Smith, 2018). In Zambia, the direct cause of 34% of maternal mortality is PPH (Stray-Pedersen, 2017). In this regard, the World Health Organisation (WHO) provides various evidence based interventions that focus on prevention and management of PPH to reduce maternal mortality due to PPH (WHO, 2016). Compliance to these interventions is cardinal in mitigating PPH. In Katete district, the number of women experiencing PPH and subsequent death is over half on average since 2015 (KDHO-HIMS, 2019). This calls for evaluation of compliance by midwives to the WHO's guidelines against PPH in the district.

Global and regional studies show that, PPH is more common in nulliparas, multiparas, prolonged and augmented labour, preeclampsia, episiotomy, multiple pregnancy, forceps or vacuum delivery and retained placenta (WHO, 2012; Prata et al., 2011; Sosa et al., 2010). Despite the risk factors associated with PPH, strict adherence of midwives to interventions aimed at preventing PPH has shown to reduce the occurrence of PPH and the resulting mortalities (WHO, 2016). Ironically, there is inadequate published information on compliance of midwives to interventions for the prevention and management of PPH in Zambia and Katete district in particular; hence the need to undertake this study. This Chapter presents the background information, statement of the problem, justification, conceptual framework, research questions, main objectives, specific objectives, hypothesis, conceptual definitions, operational definitions, variables, variables indicators, and cut off points for the study.

## 1.1 Background

Maternal mortalities arising from PPH and associated conditions during or after childbirth are high in low and middle-income countries (McClure, 2013). Since midwives are the mainstay of maternal health care, their compliance to PPH prevention and management guidelines is cardinal in determining obstetric care outcomes. Compliance to PPH intervention guidelines implies obliging or yielding to the WHO recommended practices and interventions in the prevention and management of PPH in order to reduce maternal mortalities.

Although the global prevalence of PPH is 6%, the highest burden affects the low-income countries especially Sub-Saharan Africa, with rates of 10% (Traore, 2018). In Uganda, which is one of the countries in Sub-Saharan Africa, PPH causes 25% of maternal deaths (Onoge, 2016). In Zambia, reports reveal that the most common direct cause of maternal mortality is PPH, which stands at 34% (Stray-Pedersen, 2017). Risk factors contributing to PPH include; older age, non-use of oxytocin, past history of PPH, grand multiparity, large babies, primigravida, labour induction, intrauterine foetal death and caesarean births (Stray-Pedersen, 2017). The direct causes of PPH include; uterine atony; (contributing 75%), trauma to the genital tract, retained placenta and failure of blood coagulation system (Edhi, 2013). Regarding compliance to the WHO PPH prevention and management recommendations, prompt identification and establishing of the diagnosis, urgency and functional referral system plan, timely and quality comprehensive obstetric emergency care are of paramount importance for the woman's survival (Souza, 2013). To mitigate the increase in mortalities due to PPH, the WHO (2018) formulated recommendations and standard guidelines for prevention and management of PPH to ensure quality management of obstetric cases. The guideline interventions are divided into; recommendations for PPH prevention, recommendations for PPH management, and organisation of care.

Under recommendations for PPH prevention, Active Management of Third Stage of Labour (AMSTL) is recommended (WHO, 2018). The use of uterotonics such as oxytocin, 10 IU intravenously (IV) or intramuscularly (IM) during the third stage of labour is recommended for all births for the prevention of PPH. In settings where oxytocin is unavailable, the use of other injectable uterotonics (if appropriate ergometrine/methyl ergometrine or the fixed drug combination of oxytocin and ergometrine) or oral misoprostol (600 µg) is recommended (WHO, 2018). In settings where skilled birth attendants are not present and oxytocin is unavailable, the

administration of misoprostol (600 µg PO) by community health care workers and lay health workers is recommended for the prevention of PPH (WHO, 2018).

In settings where skilled birth attendants are available, Controlled Cord Traction (CCT) is recommended for vaginal births if the care provider and the parturient woman regard a small reduction in blood loss and a small reduction in the duration of the third stage of labour as important (WHO, 2012). However, where skilled birth attendants are unavailable, CCT is not recommended. Late cord clamping (performed after 1 to 3 minutes after birth) is recommended for all births while initiating simultaneous essential newborn care. Early cord clamping (<1 minute after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation (WHO, 2012).

Sustained uterine massage is not recommended as an intervention to prevent PPH in women who have received prophylactic oxytocin. Postpartum abdominal uterine tonus assessment for early identification of uterine atony is recommended for all women. For the prevention of PPH in caesarean section, oxytocin (IV or IM) is the recommended uterotonic drug and CCT is the recommended method for removal of the placenta (WHO, 2012).

In managing PPH, intravenous oxytocin alone is the recommended uterotonic drug for the treatment of PPH. But if intravenous oxytocin is unavailable, or if the bleeding does not respond to oxytocin, the use of intravenous ergometrine, oxytocin-ergometrine fixed dose, or a prostaglandin drug (including sublingual misoprostol, 800 µg) is recommended (WHO, 2018). The use of tranexamic acid is recommended for the treatment of PPH if oxytocin and other uterotonics fail to stop bleeding or if it is thought that the bleeding may be partly due to trauma on fluid resuscitation. The use of isotonic crystalloids is recommended in preference to the use of colloids for the initial intravenous fluid resuscitation of women with PPH (WHO, 2018).

Uterine massage is also recommended for the treatment of PPH. If a woman does not respond to treatment using uterotonics, or if uterotonics are unavailable, the use of intrauterine balloon tamponade is recommended for the treatment of PPH due to uterine atony (WHO, 2012). If other measures have failed and if the necessary resources are available, the use of uterine artery embolisation is recommended. If bleeding does not stop in spite of treatment using uterotonics and other available conservative interventions (e.g. uterine massage, balloon tamponade), the use of surgical interventions is recommended (WHO, 2012).

The use of bimanual uterine compression and external aortic compression is recommended as a temporising measure until appropriate care is available for the treatment of PPH due to uterine atony after vaginal delivery (WHO, 2012). On the other hand, the use of uterine packing is not recommended for the treatment of PPH due to uterine atony after vaginal birth. The use of non-pneumatic anti-shock garments is also recommended as a temporising measure until appropriate care is available. If the placenta is not expelled spontaneously, the use of IV/IM oxytocin (10 IU) in combination with CCT is recommended (WHO, 2018).

A single dose of antibiotics (ampicillin or first-generation cephalosporin) is recommended if manual removal of the placenta is practiced (WHO, 2018). However, the use of ergometrine for the management of retained placenta is not recommended as this may cause tetanic uterine contractions, which may delay the expulsion of the placenta (WHO, 2012). The use of prostaglandin E2 alpha (dinoprostone or sulprostone) for the management of retained placenta is not recommended as well (WHO, 2018). In addition to these intervention guidelines, the WHO (2016) recommends that all antenatal mothers be given intermittent presumptive treatment-Fansidar (IPTp-SP) starting at 13 weeks of pregnancy till time of delivery, to prevent malaria, a condition which results in anaemia, hence predisposing a woman to PPH. Furthermore, all pregnant women should be given folic acid and ferrous sulphate to be taken daily to prevent anaemia.

Regarding organisation of care, the WHO (2012) recommends the use of formal protocols by health facilities for the prevention and treatment of PPH and the use of formal protocols for referral of high-risk women to a higher level of care is recommended. The use of simulations of PPH treatment is also recommended for pre-service and in-service training programmes while monitoring the use of uterotonics after birth for the prevention of PPH as a process indicator for programmatic evaluation (WHO, 2012).

Due to the success of the WHO guidelines in mitigating PPH related mortalities the Government of the Republic of Zambia (GRZ) and its Cooperating partners adopted and distributed the guidelines countrywide (Central Statistics Office [CSO], 2015). One of the Cooperating partners, the Swedish International Agency (SIDA) has invested about US\$ 44 million into the health sector in Zambia to improve Maternal and Child Health (MCH), of which an estimated US\$19 million has been allocated to Eastern province (Reproductive Maternal, Neonatal and Child Health [RMNCH], 2015). To ensure skilled maternal attendance, the General Nursing Council of Zambia

(GNC) provides a specialist curriculum for midwives and ensures adequate training in obstetric care (GNC, 2014). In addition, GNC has gone a milestone by incorporating Integrated Reproductive Health (IRH) in the nursing curriculum in order to equip all nurses with the skills to help mothers when there is no midwife, as well as to treat women wholly, when they seek medical advice. Furthermore, nurses and midwives are trained in emergency obstetric and neonatal care (EmONC), while midwives also undergo training in Help Mothers Survive Bleeding after Birth (HMS-BAB) so as to manage PPH promptly (MoH, 2016). These trainings ensure that midwives are well equipped with both knowledge and skills and expected to skilfully prevent and manage PPH. To enhance compliance to the WHO guidelines and quality maternal care, the Eastern Provincial Health Office (EPHO) and Katete District Health Office (KDHO) monitor institutional performance through performance assessment and provide mentorship and technical support every quarter (EPHO, 2017). The Katete District Health Management Team (KDHMT) has also been provided with an ambulance which is stationed at the District Health Office (DHO), where all health facilities access it whenever there is an emergency, in order to curb the transport problem during referral (KDHO, 2017).

## 1.2. Statement of the Problem

PPH is the major cause of maternal morbidity and mortality in developing countries (Onasoga, et al., 2012). In Zambia, over a quarter (34%) of maternal deaths are related to PPH despite the massive support, investment and implementation of the WHO intervention guidelines aimed at improving prevention and management of PPH in the country (Stray-Pedersen, 2017; CSO, 2019). In Katete district, mortalities due to PPH averaged over 55% in the last four years' as shown in Table 1. (KDHO, 2018)

**Table 1: Maternal Deaths due to PPH in Katete district**

<b>YEAR</b>	<b>Total PPH cases</b>	<b>Deaths</b>	<b>Percentage (%)</b>
2015	8	5	62%
2016	4	2	50%
2017	15	5	33%
2018	6	6	100%

Source: (SFMH, 2018).

This is contrary to the WHO acceptable standard that “No woman should die while giving life or birth” (MoH, 2013). The disparity indicates that there could be shortcomings in midwives’ compliance to the intervention guidelines that are in place for prevention and management of PPH in the districts. Since PPH cases and related mortalities have been on the rise in Katete amidst all necessary interventions, it is imperative that the compliance of nurses and midwives to the WHO PPH prevention and management guidelines is determined in order to highlight some grey areas that may exist and strengthen those that are working well. It is on this basis that this study to establish the compliance of midwives to PPH prevention, management and treatment guidelines in Katete district was conducted.

### **1.3. Significance of the study**

The inability to minimise maternal loss from PPH in the presence of recommended interventions in Katete district raised questions on healthcare practitioners’ commitment to promoting maternal health during delivery, particularly, midwives’ compliance to the WHO guidelines in prevention and management of PPH. Hence, this study, aimed at assessing midwives’ compliance to intervention guidelines for prevention and management of PPH. In view of this, the findings of the study have provided new insights on midwives’ compliance in the prevention and management of PPH in Katete district in relation to MoH and WHO guidelines. This information will benefit both patients and care providers in the sense that workable evidence-based interventions can be instituted, hence, improving midwives’ compliance to prevention and management of PPH in the district. In addition, relevant stakeholders can put measures to improve maternal health care outcomes, thereby, changing the current situation in Katete district, where many women are facing morbidities and mortalities due to PPH.

### **1.4 Research question**

Are midwives in Katete district complying with national and international intervention guidelines for the prevention and management of PPH?

### **1.5. Research Objectives**

#### **1.5.1. General Objective**

The general objective of this study was to evaluate midwives’ compliance to national and international guidelines for the prevention and management of PPH in Katete district.

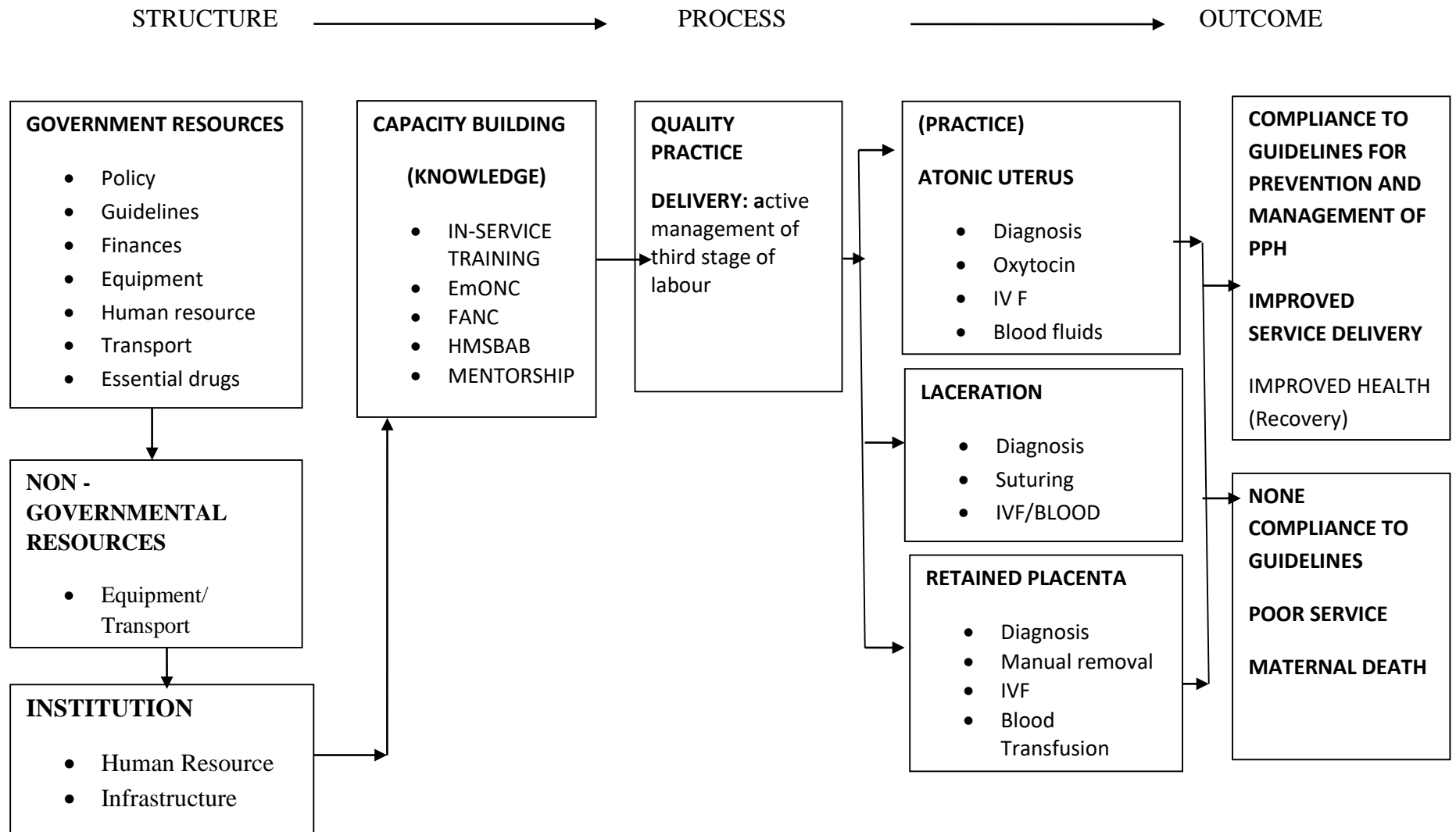
### **1.5.2. Specific Objectives**

1. To determine knowledge of midwives on national and international guidelines for the prevention and management of PPH in Katete district.
2. To assess the practices of midwives in relation to compliance to national and international guidelines for the prevention and management of PPH in Katete district.
3. To determine the availability of resources in the prevention and management of PPH in Katete district.

### **1.6 Conceptual Framework**

The Donabedian model was chosen to guide this study because it can be utilised to assess the structure, process and outcome of interventions meant for the provision of obstetric care, in this case, midwives in Katete district's compliance to guidelines for prevention and management of PPH (Donabedian, 2003). The Donabedian model is a conceptual model which was originally developed in 1966 by Avedis Donabedian, a researcher and physician at the University of Michigan. The model looks at 'Structure, Process and Outcome' in order to monitor and evaluate the health services delivery system and quality of care (Donabedian, 2003).

**Figure 1: Modified Donabedian Conceptual Framework for Evaluating Midwives' Compliance to Guidelines for Prevention and Management of PPH.**





### **1.6.1. Application of Conceptual Framework to the Study**

According to the model, **Structure**, involves the infrastructure or health facility, availability of resources like finances, equipment, skilled staff, medical supplies, blood products, transport, essential drugs (oxytocin, antibiotics), protocols, guidelines and trainings (Donabedian, 2003). Resources are made available for management of PPH to strengthen the delivery of health services and quality care to women with PPH by health care providers. There is also in-service training of health staff and orientation in new protocols and guidelines on active management of third stage of labour (AMTSL) and management PPH. This provides staff with skill to properly prevent and manage patients as they practice.

**Process** looks at the delivery of care by healthcare providers; in this case, midwives and nurses. This involves prevention and management of PPH. Identification, diagnosis, prompt and comprehensive treatment of PPH is paramount to patients' survival. Hence, AMTSL and PPH treatment depending on the cause is important in the process. Process depends on the availability of resources, promptness and comprehensive management of PPH. Therefore, good management of third stage of labour and PPH according to laid down protocols or/and guidelines is considered to be quality care.

**Outcome** is the results of the health care delivered, and in this case, it is the effects of midwives' compliance to national and international guidelines for prevention and management of PPH through interventions such as AMTSL, EmOC and HMS-BAB. The Donabedian model links the outcome to good governance, good policies, availability of protocols and guidelines availability of resources, good health systems, knowledge, attitudes and practice (Donabedian, 2003).

## **1.7. Variables**

### **1.7.1. Dependent Variable**

The dependent variable of this study is midwives' compliance to guidelines in prevention and management of PPH.

### **1.7.2 Independent Variables**

The independent variables are:

- Knowledge of guidelines for management and prevention of PPH
- Practice of prevention and management of PPH
- Availability of Resources for prevention and management of PPH

## 1.8. Variables and Cut-Off Points

**Table 2: Variables, Indicators and Cut off points**

<b>Variables</b>	<b>Cut off Points</b>	<b>Indicators</b>	<b>Question Number.</b>
<b>INDEPENDENT VARIABLES</b>			
<b>Knowledge</b>	High	When a respondent scores at least 60% of questions on knowledge of guidelines for prevention and management of PPH	<b>6-32</b>
	Low	When a respondent scores less than 60% of questions on knowledge guidelines for prevention and management of PPH	
<b>Practice</b>	Good	When a respondent score at least 60% of practices that positively influence prevention and management of PPH	<b>1-27</b>
	Poor	When a respondent scores less than 60% of practices that negatively influence prevention and management of PPH.	
<b>Resources</b>	Adequate	When at least 75% the required resources for the prevention and management of PPH are available	<b>28-34</b>
	Inadequate	When less than 75% of the required resources for the prevention and management of PPH are available	
<b>DEPENDENT VARIABLE</b>			
Midwives' compliance to PPH prevention and management intervention guidelines.	Compliant	When a respondent complies with at least 60% of MoH intervention guidelines for the prevention and management of PPH	
	Not compliant	When a respondent complies with less than 60% of MoH intervention guidelines for the prevention and management of PPH	

### **1.9. Conceptual Definition of Terms.**

**Attitude:** Refers to someone's negative or positive opinions or feeling about something especially as shown by their behavior (Bauserman, 2015)

**Practice:** A way of doing something that is the usual or expected way in a particular organization or situation (Abdul-Kadir, 2014).

**Outcome:** The result or consequence or effect of an action (Bauserman, 2015).

**Evaluation:** It is a structured process of assessing the success of a project in meeting its goals and to reflect on the lessons learned (Bauserman, 2015)

**Monitoring:** It is the setting of targets and milestones to measure progress and achievement, also if the inputs are producing the planned output (Abdul-Kadir, 2014).

**Intervention:** A purposeful action or actions to achieve a change (Bauserman, 2015).

**Maternal Mortality:** Maternal death is defined as the death of a woman while pregnant or within 42 days of giving birth or termination of pregnancy, irrespective of the duration or type of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (WHO, 2018).

### **1.10 Operational Definition of Terms**

For the purpose of this study the following terms have operationally been defined as:

**Resources:** This refers to equipment, essential drugs, medical supplies, skilled staff, blood, transport, facility/ infrastructure, Information Education and Communication (IEC) material and trainings offered/supplied by the government and cooperate partners/ donors to prevent and manage PPH.

**Compliance:** The act of practicing or adhering to MoH recommended guidelines for PPH prevention and management

**Knowledge:** Information, skills and understanding of PPH prevention and management, gained through learning or experience.

**Practice:** Is the action carried out by a nurse or midwife regularly in order to be proficient in the prevention and management of PPH.

**Quality of care:** The extent to which health care services provided lead to the prevention and management of PPH.

**Skill:** The ability to adequately perform a recommended PPH management and prevention activity acquired through experience and teaching

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0. Introduction

This study focused on compliance of midwives to national and international intervention guidelines in PPH prevention and management to reduce maternal mortality in Katete district. Literature review for this study focused on published studies and the process of reviewing the literature was done to identify scientific, evidence based literatures that would add value to the study. Scientific studies not older than ten years were searched electronically from international and local publications and books. The selected literature in this chapter is discussed under the following headings: overview of PPH prevention and management guidelines, availability of resources for PPH prevention and management, providers' knowledge on PPH guidelines, practices in PPH management, compliance to PPH prevention and management guidelines and finally a conclusion is drawn.

#### 2.1. Overview on PPH prevention and management guidelines

In economically developed and developing countries, PPH is a leading cause of severe maternal morbidity and mortality with approximately, 14 million women suffering from PPH annually; contributing to 25–30% of the 529,000 pregnancy-related deaths every year in the developing world (Prata et al., 2013). This makes severe bleeding the single most important cause of maternal mortality worldwide, with an estimated 12% of the survivors suffering from the consequences of severe anaemia (Prata et al., 2013; WHO, 2012).

According to various studies, PPH in vaginal deliveries is more common but not limited to nulliparas, multiparas, prolonged and augmented labour, preeclampsia, episiotomy, multiple pregnancy, forceps or vacuum delivery and retained placenta (WHO, 2012; Prata et al., 2011; Sosa et al., 2010). Although determinants of, and risk factors for PPH have been studied to identify pregnant women with increased risk, obstetric textbooks show no indication of their relative importance or frequency (Sosa et al., 2010). Due to the dangers associated with PPH, AMTSL, first described in 1962 is considered the “gold standard” strategy to reducing the incidence of PPH. It combines CCT, uterine massage with the administration of an uterotonic drug after the delivery of the placenta (FIGO, 2012). Even though the WHO strongly recommends AMTSL, it also

provides recommendations on the relative importance of each component. For example, the practice of CCT has a weak recommendation level; only to be practiced if small reductions in blood loss or durations of the third stage of labour are perceived to be beneficial. Meanwhile early cord clamping is no longer recommended and sustained uterine massage is no longer recommended in women who receive prophylactic oxytocin, although it was initially a common component of AMTSL. Instead, it is recommended that abdominal tonus assessment be conducted by a skilled provider, for all women (WHO, 2015; Lalonde, 2012).

Since PPH can be detrimental to a woman, its prevention through the WHO recommended interventions and prompt identification and diagnosis, urgency and referral system plan, timely and quality comprehensive obstetric emergency care may determine whether a woman survives or not (Souza, 2013). However, a strong health care system that complies with PPH prevention and management guidelines is necessary because these interventions in isolation may not be enough to prevent maternal morbidity and mortality, as these measures are not a replacement for a weak health care infrastructure or limited health care personnel, which must be among PPH preventive interventions (Prata et al., 2013).

## **2.2. Compliance of midwives to PPH prevention and management guidelines.**

Guidelines in the prevention and management of PPH have proven to positively influence maternal outcomes. According to Sosa et al. (2010), non-use of AMSTL is a risk factor of PPH and efforts should be made; during the time of delivery, to apply prevention techniques such as restrictive episiotomy and AMSTL to prevent PPH in vaginal deliveries. Although AMSTL is considered the “gold standard” strategy for reducing the incidence of PPH, oxytocin has limited application in resource-poor countries, due to its heat instability and required administration by a skilled provider (Prata et al., 2013). This is likely to affect nurses and midwives’ compliance to PPH prevention and management interventions. According to the WHO (2013), oxytocin is not heat stable and therefore, an impractical intervention in many low-resource settings where extreme heat is coupled with limited access to refrigeration.

A study on current perspectives in PPH prevention in low resource settings by Prata et al. (2013) proved that compliance to interventions against PPH was associated with a 34% reduction in PPH incidence. Performing CCT significantly reduced haemorrhage risks by nearly 50% as compared with no AMTSL components (Prata et al., 2013).

Another study on the efficacy of lower uterine segment compression for prevention of early PPH after vaginal delivery concluded that the efficacy of lower uterine segment compression versus nothing was associated with a significantly lower incidence of PPH (Chantrapitak et al., 2011). This was in addition to oxytocin, cutting and clamping of the umbilical cord, and CCT. Corresponding to this is a study by Sutherland et al. (2014) on cost-effectiveness of misoprostol and prenatal iron supplementation as maternal mortality interventions in home births in rural India. The study estimated that the consistent use of a conventional uterotonic in every birth could avert 41 million cases of PPH, resulting in an estimated 1.4 million lives saved (Chantrapitak et al., 2011). Further findings showed that misoprostol use was a cost-effective intervention for PPH prevention as it could reduce maternal deaths by approximately 38% (Chantrapitak et al., 2011). The findings of these studies indicate that adherence to PPH prevention and management guidelines has greater potential to avert the high mortality incidences associated with PPH.

In many developing countries maternal mortalities continue to go up with haemorrhage accounting for the single largest cause which may indicate the ineffectiveness of various interventions aimed at preventing or managing PPH in these countries (Vahiddastjerdy et al., 2016). This ineffectiveness could be related to non-compliance to recommended interventions among health care workers due to limited knowledge, resources or staff. Despite the limited resources and poor staffing levels, nurses and midwives need to adhere to these measures to tackle PPH related mortalities. In addition to PPH prevention and management guidelines, Olowokere et al. (2013) showed that certain measures such as prior antenatal booking may help in abating PPH as it was associated with lower PPH prevalence, while Prata et al. (2013) suggested that one strategy for increasing access to these life-saving interventions is to encourage facility-based delivery, especially during prenatal care. However, nurses and midwives' compliance to standard guidelines in the prevention and management of PPH is pertinent in yielding positive maternal outcomes.

### **2.3. Providers' knowledge on intervention guidelines in PPH prevention and management.**

Knowledge is a pre-requisite for effective compliance to PPH prevention and management guidelines. However, many health care workers in both developed and developing countries have little or no access to basic practical information of PPH, making it difficult to assess women with the risk factors typically leading to the complication that develops due to PPH (Bulundi et al., 2017). An international study on influencing factors for high quality care on PPH in the Netherlands revealed that health workers had little knowledge on PPH prevention and management due to absence of various guideline recommendations in local protocols and failing team communication which resulted in poor communication with patients (Woiski et al., 2015). Team training and checklists or flowcharts were considered facilitators for better care (Woiski et al., 2015). A study in Sri-Lanka on knowledge of health workers on PPH management concluded that being knowledgeable in the art of using the available resources to prevent and manage PPH, abated cases of mortalities due to PPH (Population Reports in the Community, 2012).

According to a study by Sosa et al. (2010) on risk factors for PPH in vaginal deliveries in a Latin-American population, knowledge of health care providers on the high risk obstetric conditions requiring higher level management such as retained placenta, multiple pregnancy and macrosomia was found to be necessary for timely and appropriate referrals in the best interest of women's health. On the other hand, knowledge on AMSTL showed a protective effect against developing moderate PPH (Sosa et al., 2010). In the same vein, in a study on knowledge and management of PPH among skilled birth attendants in Nigeria, Bulundi et al. (2017) showed that the majority (70%) of the health workers indicated that patients with PPH or at risk of PPH were candidates for referral to secondary faculties. This finding was in sharp contrast with a study by Asuke et al. (2016) who reported that only 21% of rural health care facilities personnel had good knowledge of referral as 30% of respondents did referral of patient with PPH. In this regard, Asuke et al. (2016) recommended an urgent need for training on referral system for combating PPH in primary health in resource limited settings.

In Nigeria, a study on knowledge and management of PPH among skilled birth attendants in primary health centres (PHC) by Bulundi et al. (2017) revealed varying knowledge attributes among health care personnel. In this study, over a quarter did not have management protocols for PPH in their PHC or did not know about them. Similarly, on cord clamping respondents expressed



divisive opinions as 34% said early cord clamping reduced PPH, 40% said it did not reduce PPH, while 26% had no idea (Bulundi et al., 2017). The divisive nature in the knowledge health care workers expressed may be of great concern regarding the effectiveness of interventions to prevent or manage PPH. Bulundi et al. (2017) further found that health care personnel' knowledge and opinions on standard AMSTL guidelines still differed, while most recommended bladder emptying as a PPH preventive measure 40% either disagreed or had no idea on its effectiveness in mitigating PPH. In addition, most (66%) never heard of anti-shock garment (Bulundi et al., 2017). Health care providers only seemed to reach a consensus in opinion regarding the use of uterotonic drugs in PPH management and prevention. These variations in opinion indeed pose a great risk to the lives of women during childbirth hence needs constant evaluation.

Regarding knowledge and PPH management, various studies (Bulundi et al., 2017; Mutunga et al., 2015; Faiza et al., 2009) revealed that professional qualifications as relates to level of knowledge and the management of PPH was significantly associated with management of PPH. According to Bulundi et al. (2017), 80% of registered nurses and registered midwives (RN/RM) demonstrated high level of knowledge in the management of PPH, this is in agreement with the finding of Mutunga et al. (2015) which stated that 90.9% of midwives could diagnose PPH and suture perineal tears. In the same way, Faiza et al. (2009) found that 78% of nurse midwives had high knowledge of PPH and management skills required for handling the condition. Nevertheless, Woiski et al. (2015) uncovered that professionals such as obstetricians in training, and midwives in particular lacked awareness about the importance of some recommendations, such as measuring the urine output and weighing the blood loss for every high-risk patient; hence these were skipped or had a lower priority to be enforced.

In a study to measure access to emergency obstetric care (EmOC) in rural Zambia, Levine et al. (2008) noted that though the number of obstetric complications at any given health centre was low, the staff in these centres felt limited in their ability to identify and manage these life-threatening complications. This could have been due to inadequate knowledge in EmOC among which PPH supervenes. In relation to this study, Mkumba (2005) recommended that since there are so many available resources at the disposal of midwives and doctors who care for women experiencing PPH in Zambia, it is very crucial that they are very knowledgeable in their use.

#### **2.4. Midwives practices in prevention and management of PPH.**

A landmark in the history of PPH prevention occurred when the three components of AMTSL were first described in 1962 involving the administration of a prophylactic uterotonic drug, early cord cutting and clamping, and CCT (Prata et al., 2013). It was not until the 1980s that AMTSL revealed a significant reduction in the incidence of PPH compared with expectant management of the third stage of labour (Prata et al., 2013). However, the manner in which these interventions are carried out may be of compromised quality leading to poor maternal management and consequently detrimental outcomes. For instance, the reliance on visual estimation of blood loss registered in the clinical records to identify PPH in developing countries is a method that has proved to have considerable inaccuracy, hence, posing compromised AMSTL and PPH care (Sosa et al., 2010).

In a French study on prevention of PPH in low-resource settings, in 38% of the women with a PPH of more than 1500 ml and in 70% of the women who died as a result of a PPH, suboptimal care factors were detected (Prata et al., 2013). Patients particularly mentioned the poor information provision about PPH as they often received no information or incorrect information on the risk factors for PPH and the medical procedures, and had no knowledge prior to delivery of their risks for PPH. If PPH occurred, patient, partners and family were not informed or they received insufficient information on the medical condition of the patient. Similar findings in a study on influencing factors for high quality care on PPH in the Netherlands, Woiski et al. (2015) noted that patients and family members received insufficient or confusing information on the risks and medical procedures during the treatment of PPH, and they thought that the professionals showed panic when PPH occurred. In the recovery period, patients received inconsistent information on the duration of recovery and the policy of future deliveries. Patients further reported feeling disregarded by health care professionals. In addition, premature discharge from the hospital and dealing with many different clinicians were considered poor care quality by patients (Woiski et al., 2015).

The storage of uterotonic drugs can be particularly challenging, due to their instability in high temperatures and light. An assessment of the potency of injectable uterotonic drugs purchased by simulated clients in three districts in Ghana revealed that procurement of unregistered drugs may be prolific and the quality of the drugs may be compromised (Stanton et al., 2012).

In line with this, researchers in Ghana found that 89% of all ampoules of oxytocin and ergometrine tested did not meet the specifications for the active ingredient, which was not a result of being expired; this problem was present in both the public and private sector (Stanton et al., 2012). The Global Sustainable Development Goals (SDGs) Network for Perinatal and Reproductive Health noted inconsistencies in the use of uterotonics. In a survey of 15 tertiary level facilities conducted by the Global Network, prophylactic oxytocin was only used in 44% of the cases, and was the least used of the three components of AMTSL assessed (Smith et al., 2013). This clearly expressed compromised care quality regarding AMSTL and PPH as it defied the WHO recommendations.

In Zambia, MoH (2015) revealed that the absolute shortages of health workers, inequities in the distribution of health workers and skills were major obstacles to the provision of quality services and to the achievement of the national health objectives and SDGs regarding maternal health outcomes. In a study on access to EmOC in rural Zambia, Levine et al. (2008) revealed that none of the health centres in Central province had the capacity to perform basic EmOC, as defined by the United Nations (UN) guidelines. This is despite the vast majority of health workers having reported feeling comfortable doing most PPH preventive interventions such as removing retained products of conception. Moreover, only a few facilities could perform removal of retained products of conception in preventing PPH.

## **2.5. Availability of resources for PPH prevention and management.**

In developing countries, health systems are faced with enormous constraints that hinder the delivery of EmOC, which is vital for saving the lives of women who developed PPH (Kebebush and Betal, 2014). Due to lack of skilled human resource in most developing countries, over 50% of deliveries are attended to by unskilled providers at home. In addition, health care facilities are often not adequately staffed or lack medicines that could address PPH (Naume, 2015). This leads to high maternal mortalities from excessive bleeding. In this regard, many developing nations have a shortage of approximately 2.4 million physicians, nurses, and midwives, with the sub-Saharan Africa having a severe workforce shortage having only 1.3% of the world's skilled providers against a 25% global burden of disease (Lawn et al., 2014). Although most mortality from PPH would be eliminated if women had access to a skilled birth attendant, only 35% of births are attended by a skilled health worker in the least-developed countries due to the critical shortage (Lawn et al., 2014).

According to a study by Stanton et al. (2012), not only is human resource a challenge in preventing and treating PPH, many developing countries suffer from inadequate supplies, poor storage conditions and deficient public sector supply chains, which hinder effective PPH prevention and management. In this study, ineffective resource supply chain was observed in Tanzania and Ethiopia, where the drugs were available but not properly distributed to health facilities, creating a shortfall of AMSTL resources resulting in ineffective AMSTL interventions. In another study on PPH, Woiski et al. (2015) reported that other obstacles to PPH prevention and management were the lack of material for providing warm saline infusion and material to measure urine output.

The WHO recommends that delivery rooms must be equipped with PPH management protocols and guidelines to assist health care personnel in its management. However, in Netherlands obstacles to effective PPH prevention and management included the lack of guidelines and local protocols as only 25% of delivery rooms had the protocols and guidelines in place (Woiski et al., 2015). Similarly, in Nigeria, Bulundi et al. (2017) showed that only 20% of respondents indicated that, they had management protocol on PPH while 60% of respondents did not have management protocol for PPH at their clinics. This was likely to compromise the delivery of effective obstetric care during emergency eventualities, thereby predisposing women to mortality. Further study findings revealed that lack of resources in PPH management extended even further to unavailability of transportation in PHC facilities for referrals. The study findings uncovered that 84% of respondents indicated that there was no provision for an ambulance or transportation in cases of emergencies (Bulundi et al., 2017). This was in line with Chinomnso et al. (2016) who reported that about 30% of respondents were not referred to higher level of care due to lack of transportation in PHC facilities. In addition, Sosa et al. (2010) added that blood was another scarce resource among the developing nations, with only less than 1% from over 10% vaginal deliveries that had standard PPH having had received a blood transfusion due to its scarcity. In the same line of thought Bulundi et al. (2017) concluded that the increasing prevalence of PPH over the years could be due to the combination of increased prevalence of risk factors, lack of safe blood banking and other necessary resources.

According to MoH (2015), Zambia faces lack of resources in maternal health. These include inadequate medical staff, weak logistics management in the supply of drugs and medical supplies, inadequate and inequitable distribution of health infrastructure, equipment and transport, and

challenges related to health information systems, inadequate financing, and identified weaknesses in the health systems governance. These deficiencies may negatively affect the outcome of obstetric care. In a study on needs assessment for obstetric care in Zambia, Mkumba (2005) noted that most health facilities in the country did not have the necessary equipment such as the non-pneumatic anti-shock garment to prevent shock in women with PPH. In another study in Central province, Levine et al. (2008) found notable gaps in medication supplies and equipment. Oxytocics and magnesium sulphate were not available in the majority of health facilities and antibiotic options were inadequate. Less than 15% of health centres had the equipment necessary to perform assisted vaginal delivery (Levine et al., 2008). In addition, the WHO (2013) revealed that the shortage in the numbers and skills of health workers in Zambia could lead to high PPH related mortalities as only 53% of women in developing countries such as Zambia have assistance of skilled health personnel.

## **2.6. Summary**

Given that PPH is the main cause of maternal deaths, the recommended PPH prevention and management guidelines are important to reduce overall maternal mortality, which is the goal of every country in accordance with SDGs. The challenges in the use of evidence to recommend improvements in the quality of care are further complicated by the delays in provider uptake of practices based on new knowledge. Even when health providers recognise and accept guidelines, they may fail to adopt them, and PPH prevention efforts are no exception; hence the need for evaluation of compliance to adopted national and international interventions. One of the greatest opportunities in PPH prevention is the fact that available evidence is sufficient to establish policies and programmes that can increase access to effective interventions in low-resource settings. In order to leverage this opportunity, countries must establish supportive national policies, that start with the adoption of national guidelines for PPH prevention that reflects the WHO recommendations. However, the implementation of effective approaches is also dependent on the timely translation of research findings into policies and programmes, which remains a considerable barrier in accelerating PPH prevention efforts. Among other barriers in compliance to PPH management and prevention lies knowledge, resources and quality of care.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0. Introduction**

This chapter presents the research methodology that was used in this study to answer the research question and hence, achieve the research objectives. This research methodology and methods chapter discusses the research design, study setting, study population, sampling, data collection plan, ethical considerations, data analysis plan, validity and reliability, and dissemination plan.

#### **3.1. Study design**

A cross sectional study design was used. This means that data was collected at one point in time and the quantitative paradigm assisted in quantifying the variables in numerical values that measured statistical influences.

#### **3.2. Study setting**

The study was conducted in Katete district; a small rural district with an area size of 3,877 km square, situated 500 km east of Lusaka and 100 km from Chipata district (CSO, 2019). Head count population distribution by CSO (2019) shows that Katete district has a population of 215,576 people. The expected pregnancies are 11, 266 with expected deliveries of 10,849 and live births of 10, 327 (CSO, 2019). Katete district has 164 nurses and midwives against 37 health facilities. Out of the 37 facilities; 19 are health posts, 11 are health centres, 6 are zonal health centres and one is a 2<sup>nd</sup> level hospital. The study sites included; one hospital (Saint Francis mission hospital), six zonal health centres (Kagoro, Katete urban, Chibolya, Vlamukoko, Chimutenede, Kafumbwe), one health post (Katiula) and five health centres (Mutetezi, Undi, Kafunka, Kampambe, Nyembe).

#### **3.3. Study population**

The study population consisted of midwives working in maternity units; antenatal, labour and postnatal sections in the study sites.

### 3.4. Sampling

Using multistage sampling, health facilities were stratified into health posts, health centres, zonal health centres and hospitals. Purposive sampling was then used to select health facilities from each stratum. Simple random sampling was used to select midwives from facilities that had more than one midwife, while, convenience sampling was used in facilities with a single midwife, in that the available midwife was included in the study.

#### 3.4.1. Inclusion criteria

The inclusion criterion was midwives that had worked for at least a month in maternity units in Katete district irrespective of whether they had undergone EmOC training or not.

#### 3.4.2. Exclusion criteria

Midwives were excluded from the study if they were:

- On leave or
- Out of the facility during the time of data collection
- Not willing to participate in the study

#### 3.4.3. Sample size

The Cochran formula was used. This formula is used to calculate the sample size for an unknown prevalence proportion (Asuke et al., 2016).

$$n = \frac{Z^2 P (1-P)}{D^2}$$

Where:

- **S** is Sample size
- **Z** is the z-statistics for the desired level of confidence; therefore,  $Z = 1.96$  for 95 percent confidence level
- **P** is the prevalence or the margin of error which is 0.5
- **d** is the variance (standard deviation) which is 0.05

$$n = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2}$$

$$n = \frac{0.96025}{0.0025}$$

$$n = 384$$

Since the number of midwives in Katete was less than 1000, the final sample size was adjusted using the following formula:

$$\text{Final } n = \frac{n}{1 + (n/N)}$$

- where n is the calculated sample size using prevalence/proportions
- N is the population size being adjusted for

$$n = \frac{384}{1 + (384/54)} = 47$$

However, due to some midwives being on leave, off duty and sick during the period of data collection, and the other two health facilities being hard to reach, 36 instead of 47 midwives participated.

### **3.5. Data collection tools**

A self-administered structured questionnaire (Appendix III) with both open and closed-ended questions and a checklist (Appendix IV) were used to collect data. The checklist was used to physically observe the availability of equipment, drugs, infrastructure, guidelines, and other necessary items needed for implementation of interventions for prevention and management of PPH.

#### **3.5.1 Data collection**

Data was collected between 5<sup>th</sup> and 20<sup>th</sup> October 2019. This was after ethics clearance (Appendix VII) and permission formalities (Appendices V and VI) were approved.



### **3.5.2. Data collection techniques**

On each day of data collection, the researcher started by introducing herself to the respondents and then explained the purpose of the study. The respondents were informed that their participation was voluntary, that no names were to be indicated on the data collection tools, and that information obtained was going to be kept confidential throughout the research process. After all the explanations, those who were willing to participate were given a participant information sheet (Appendix I) that gave detailed information about the study. Each respondent was asked to sign a consent form (Appendix II) before filling in the questionnaire. Each respondent was thanked after completing the questionnaire.

### **3.5.3. Data management and storage**

To ensure security, easy reference, quick and efficient retrieval and to prevent data losses; filled in questionnaires and checklists were kept in a lockable trunk. Data were also protected by limiting the usage of transfer to gadgets and only the researcher had access Password to the Google drive database. After completion of the study the, data will be kept safely for a period stipulated by the University, and thereafter, incinerated.

## **3.6. Ethical considerations**

Ethics clearance was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC). Request for permission to conduct the study was obtained from the Provincial Health Director (PHD) and

Katete district Health Office (KDHO). Signed consent forms were obtained and the respondents were briefed about their right to participate or withdraw from the study at any stage if they felt so without any adverse consequences. Respondents were assured of confidentiality and that their names were not indicated anywhere to ensure anonymity. The completed questionnaires and checklists were kept under strict security conditions to avoid unauthorised access. To ensure privacy, checklists were filled in by the researcher and respondents filled in the questionnaires in private rooms.

### **3.7. Validity**

To ensure validity, data was collected using the WHO validated tools and experts in gynaecology, obstetrics and research supervisors examined the questions to determine their appropriateness to the variables that were measured. Furthermore, the questions were constructed in a simple, clear and precise way to give respondents chance to give clear and precise answers. Triangulation using the information from the checklist and open-ended questions was used.

### **3.8. Reliability**

To ensure reliability, the research instruments were pretested in a pilot study, and all the concerns that were raised were sorted out before the main study was conducted. The sampling methods that were used to select the health facilities and respondents did not provide biasness in selection.

### **3.9. Pilot study**

A pilot study was conducted in Sinda district. The district was chosen due to its similarity to the district where the main study was conducted, in terms of geo location, population, social, physical, and economic determinants of health. The sample size for the pilot study consisted of 5 midwives, which is 10% of the calculated sample size for the main study. The purpose of the pilot study was to test the data collection tools and ascertain the time required for data collection. Additionally, it helped in refining the data collection tools to ensure all the variables in the study were measured. Identified gaps, helped the investigator to add or remove some questions to achieve the objective of the study.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND PRESENTATION OF FINDINGS**

#### **4.0. Introduction**

This chapter presents the findings of the study and information on how data were analysed. The analysis and presentation of findings focused on the socio-demographic characteristics of the respondents, knowledge on PPH prevention and management guidelines and midwives' practices in PPH prevention and management. The chapter also presents information on the availability of resources in PPH prevention and management in institutions providing maternal care in Katete district. Data are presented using bar charts, pie charts and frequency tables.

#### **4.1. Data Processing and Analysis**

Following data collection, questionnaires were screened for consistence, completeness, legibility and accuracy. Responses were assigned numerical codes for categorisation, easy entry and analysis. The codes were then entered and analysed using SPSS version 23.0 software. Cross tabulations among the dependent and independent variables were done to establish associations using the Chi-Square test on SPSS software. For cells with frequencies less than 5, Fisher's Exact test was employed and Binary Logistic Regression was used to further analyse relationships between variables. The level of statistical significance was set at 5%. Therefore, only  $p$  values of 0.05 or less were considered statistically significant.

#### **4.2. Section A: Socio-demographic characteristics of respondents**

This section provides personal information of respondents involved in the study, focusing on age, gender, professional qualifications and length of service.

**Table 4.1: Respondents' socio-demographic characteristics (n=36)**

Characteristic	Frequency	Percentage
<b>Age</b>		
20-35 years	9	25.0
36-50 years	23	63.9
Over 50 years	4	11.1
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Gender</b>		
Male	12	33.3
Female	24	66.7
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Level of qualification</b>		
Enrolled midwife	16	44.4
Registered midwife	20	55.6
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Length of service</b>		
Less than 2 years	8	22.2
2-5 years	8	22.2
Over 5 years	20	55.6
<b>Total</b>	<b>36</b>	<b>100</b>

Table 4.1 shows that most respondents, 63.9% (23) were aged 36-50 years, while the least 11.1% (4) were over 50 years and most, 66.7% (24) were females. Over half, 55.6% (20) were RMs, while 44.4% (16) were enrolled midwives (EMs) and more than half, 55.6% (20) had worked for over 5 years as midwives. Less than a quarter, 22.2% (8) had worked for 2-5 years as well as less than 2 years each.

#### **4.3. Section B: Midwives' knowledge of PPH prevention guidelines**

This section provides information on knowledge of midwives on the WHO guidelines on prevention of PPH.

**Table 4.2: Respondents knowledge on the WHO PPH prevention guidelines (n=36)**

<b>WHO recommendations</b>	<b>Frequency</b>	<b>Percentage</b>
<b>The use of uterotonics for the prevention of PPH during the third stage of labour is recommended for all births</b>		
True	30	83.3
False	6	16.7
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Oxytocin is the recommended uterotonic drug for the prevention of PPH.</b>		
True	34	94.5
False	2	5.6
<b>Total</b>	<b>36</b>	<b>100</b>
<b>In settings where oxytocin is unavailable, the use of other injectable uterotonics or oral misoprostol is recommended.</b>		
True	29	80.6
False	4	11.1
I don't know	3	8.3
<b>Total</b>	<b>36</b>	<b>100</b>
<b>In settings where skilled birth attendants are not present and oxytocin is unavailable, the administration of oral misoprostol by community health care workers and lay health workers is recommended for the prevention of PPH.</b>		
True	10	27.8
False	16	44.4
I don't know	10	27.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>In settings where skilled birth attendants are available, CCT is recommended for vaginal births if the care provider and the parturient woman regard a small reduction in blood loss and a small reduction in the duration of the third stage of labour as important</b>		
True	28	77.8
False	2	5.6
I don't know	6	16.7
<b>Total</b>	<b>36</b>	<b>100</b>

According to Table 4.2, Less than half, 44.4% (n=16) of the respondents indicated that the administration of oral misoprostol by community health care workers and lay health workers is not recommended for the prevention of PPH, while more than a quarter 27.8% (n=10) did not know.

**Table 4.3: Respondents knowledge on the WHO PPH prevention guidelines (n=36)**

WHO recommendations	Frequency	Percentage
<b>Late cord clamping (performed after 1 to 3 minutes after birth) is recommended for all births while initiating simultaneous essential newborn care</b>		
True	26	72.2
False	7	19.4
I don't know	3	8.3
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Early cord clamping (&lt;1 minute after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation.</b>		
True	23	63.9
False	10	27.8
I don't know	3	8.3
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Sustained uterine massage is not recommended as an intervention to prevent PPH in women who have received prophylactic oxytocin.</b>		
True	5	13.9
False	30	83.3
I don't know	1	2.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Oxytocin (IV or IM) is the recommended uterotonic drug for the prevention of PPH in caesarean section.</b>		
True	28	77.8
False	4	11.1
I don't know	4	11.1
<b>Total</b>	<b>36</b>	<b>100</b>
<b>In settings where skilled birth attendants are unavailable, CCT is not recommended.</b>		
True	9	25.0
False	25	69.4
I don't know	2	5.6
<b>Total</b>	<b>36</b>	<b>100</b>

Table 4.3 shows that above a quarter, 27.8% (10) indicated that early cord clamping (<1 minute after birth) is not recommended regardless of the neonate's condition. The majority, 83.3% (30) indicated that sustained uterine massage is a recommended intervention to prevent PPH in women who have received prophylactic oxytocin and over three quarters, 77.8% (28) of respondents agreed that Oxytocin (IV or IM) is the recommended uterotonic drug for the prevention of PPH in caesarean section.

**Table 4.4: Respondents knowledge on the WHO PPH management guidelines (n=36)**

<b>WHO recommendations</b>	<b>Frequency</b>	<b>Percentage</b>
<b>IV oxytocin alone is the recommended uterotonic drug for the treatment of PPH.</b>		
True	14	38.9
False	20	55.6
I don't know	2	5.6
<b>Total</b>	<b>36</b>	<b>100</b>
<b>If IV oxytocin is unavailable, or if the bleeding does not respond to oxytocin, the use of intravenous ergometrine, oxytocin-ergometrine fixed dose, or a prostaglandin drug is recommended.</b>		
True	20	55.6
False	10	27.8
I don't know	6	16.7
<b>Total</b>	<b>36</b>	<b>100</b>
<b>The use of isotonic crystalloids is recommended in preference to the use of colloids for the initial intravenous fluid resuscitation of women with PPH.</b>		
True	27	75.0
False	2	5.6
I don't know	7	19.4
<b>Total</b>	<b>36</b>	<b>100</b>
<b>The use of tranexamic acid is recommended for the treatment of PPH if oxytocin and other uterotonics fail to stop bleeding or if it is thought that the bleeding may be partly due to trauma.</b>		
True	18	50.0
False	4	11.1
I don't know	14	38.9
<b>Total</b>	<b>36</b>	<b>100</b>

Table 4.4 shows that over half, 55.6% (20) of the respondents disagreed that IV oxytocin alone is the recommended uterotonic drug for the treatment of PPH, and over a quarter, 27.8% (10) denied that the use of IV ergometrine, oxytocin-ergometrine fixed dose, or a prostaglandin drug is recommended if IV oxytocin is unavailable, or if the bleeding does not respond to oxytocin. Over quarter, 38.9% (14) did not know whether the use of tranexamic acid is recommended for the treatment of PPH if oxytocin and other uterotonics failed to stop bleeding, or if it is thought that the bleeding may be partly due to trauma.

**Table 4.5: Respondents knowledge on the WHO PPH management guidelines (n=36)**

<b>WHO recommendations</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Uterine massage is recommended for the treatment of PPH.</b>		
True	31	86.1
False	3	8.3
I don't know	2	5.6
<b>Total</b>	<b>36</b>	<b>100</b>
<b>If women do not respond to treatment using uterotonics, or if uterotonics are unavailable, the use of intrauterine balloon tamponade is recommended for the treatment of PPH due to uterine atony.</b>		
True	32	88.9
False	1	2.8
I don't know	3	8.3
<b>Total</b>	<b>36</b>	<b>100</b>
<b>If other measures have failed and if the necessary resources are available, the use of uterine artery embolization is recommended as a treatment for PPH due to uterine atony</b>		
True	17	47.2
False	7	19.4
I don't know	12	33.3
<b>Total</b>	<b>36</b>	<b>100</b>
<b>If bleeding does not stop in spite of treatment using uterotonics and other available conservative interventions the use of surgical interventions is recommended</b>		
True	33	91.7
I don't know	3	8.3
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Controlled cord traction is the recommended method for removal of the placenta in caesarean section.</b>		
True	13	36.1
False	21	58.3
I don't know	2	5.6
<b>Total</b>	<b>36</b>	<b>100</b>

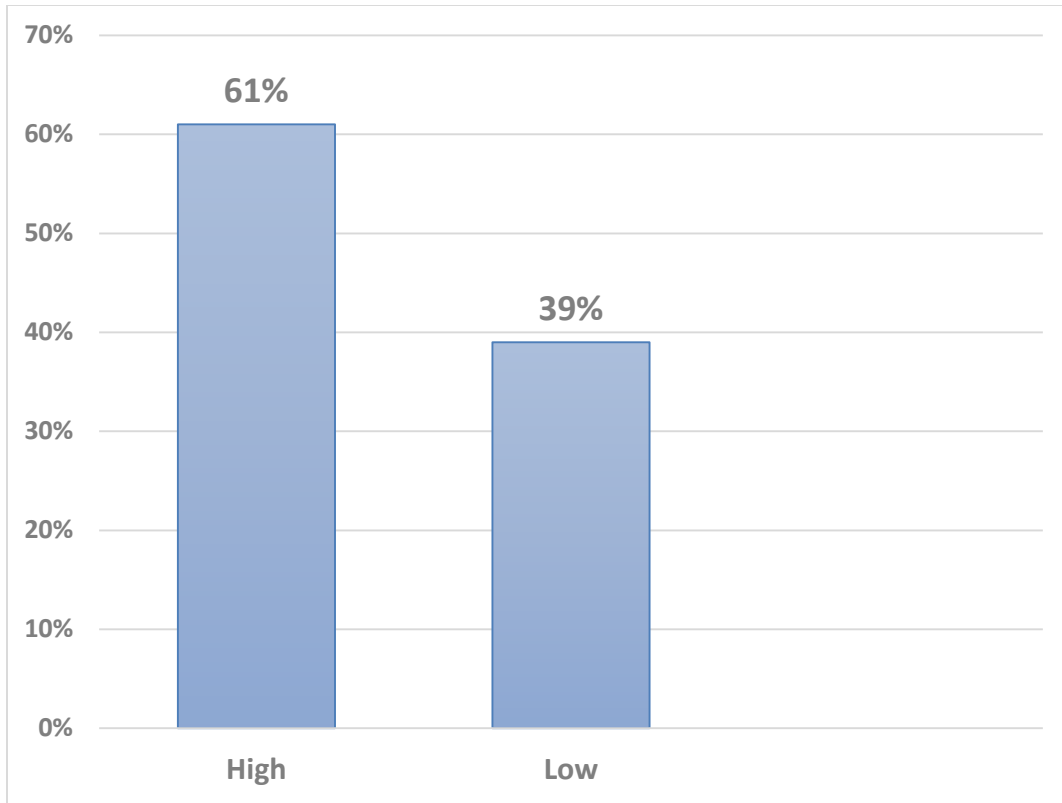
Table 4.5 shows that the majority, 86.1% (31) of the respondents agreed that uterine massage is recommended for the treatment of PPH while 33.3% (12) did not know that if other measures have failed and if the necessary resources are available, the use of uterine artery embolisation is recommended as a treatment for PPH due to uterine atony. Over half, 58.3% (21) disagreed that controlled cord traction is the recommended method for removal of the placenta in caesarean section.



**Table 4.6: Respondents knowledge on the WHO PPH management guidelines (n=36)**

WHO recommendations	Frequency	Percentage
<b>The use of non-pneumatic anti-shock garments is recommended as a temporizing measure until appropriate care is available.</b>		
True	26	72.2
False	1	2.8
I don't know	9	25.0
<b>Total</b>	<b>36</b>	<b>100</b>
<b>The use of uterine packing is not recommended for the treatment of PPH due to uterine atony after vaginal birth.</b>		
True	33	63.9
False	12	33.3
I don't know	1	2.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>If the placenta is not expelled spontaneously, the use of IV/IM oxytocin (10 IU) in combination with controlled cord traction is recommended.</b>		
True	33	91.7
False	2	5.6
I don't know	1	2.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>The use of ergometrine for the management of retained placenta is not recommended.</b>		
True	23	63.9
False	9	25.0
I don't know	4	11.1
<b>Total</b>	<b>36</b>	<b>100</b>
<b>The use of prostaglandin E2 alpha (dinoprostone or sulprostone) for the management of retained placenta is not recommended.</b>		
True	10	27.8
False	16	44.4
I don't know	10	27.8
<b>Total</b>	<b>36</b>	<b>100</b>

According to Table 4.6, a quarter, 25% (9) of respondents did not know that the use of non-pneumatic anti-shock garments is recommended as a temporizing measure until appropriate care is available. About 33.3% (12) disagreed that the use of uterine packing is not recommended for the treatment of PPH due to uterine atony and 25% (9) disagreed that the use of ergometrine in retained placenta is not recommended. Less than half, 44.4% (16) disagreed that the use of prostaglandins for the management of retained placenta is not recommended while over quarter, 27.8% (10) had no idea.



**Figure 4.1: Overall knowledge of respondents on PPH prevention and management guidelines (n=36)**

Figure 4.1 reveal that most, 61% (22) respondents had high knowledge on PPH prevention and management guidelines compared to 39% (14) who expressed low knowledge.

#### **4.4. Section C: Midwives' practices in prevention and management of PPH**

This section provides information on the practices of midwives in prevention and management of PPH.

**Table 4.7: Respondents' practices in the prevention of PPH (n=36)**

<b>WHO AMSTL Recommendations</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Palpate the uterus to exclude undiagnosed twin</b>		
Done	17	47.2
Not done	19	52.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Administer 10 units Oxytocin IM within a minute of delivery of the baby</b>		
Done	33	91.7
Not done	3	2.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Empty the bladder</b>		
Done	4	11.1
Not done	32	88.9
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Clamp the cord</b>		
Done	36	100
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Use CCT to deliver the placenta</b>		
Done	19	52.8
Not done	17	47.2
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Examine the upper vagina and cervix using a gloved hand</b>		
Done	31	86.1
Not done	5	13.9
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Remove pieces of membranes with a sponge forceps</b>		
Done	11	30.6
Not done	25	69.4
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Examine the expelled products for completeness</b>		
Done	23	63.9
Not done	13	36.1
<b>Total</b>	<b>36</b>	<b>100</b>

According to Table 4.7, 52.8% (19) of the respondents did not palpate the uterus to exclude undiagnosed twin and the majority, 88.9% (32) did not empty the bladder during delivery. Less than half, 47.2% (17) never used CCT to deliver the placenta, 69.4% (25) did not remove pieces of membranes with sponge forceps, and 36.1% (13) did not examine the expelled products for completeness. The majority, 91.7% (36) administered oxytocin, 86.1% (31) examined the upper vagina and cervix and over half, 52.8% (19) delivered the placenta using CCT method.



**Figure 4.2: Respondents' overall practices in AMSTL (n=36)**

From the Figure 4.2, half, 50% (18) of the respondents had good overall practices and half 50% (18) had poor practices on guidelines in AMTSL.

**Table 4.8: Respondents' practices in the management of PPH (n=36)**

<b>WHO PPH management recommendations</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Call for help.</b>		
Done	22	61.1
Not done	14	38.9
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Rub up a contraction.</b>		
Done	23	63.9
Not done	13	36.1
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Empty the bladder.</b>		
Done	12	33.3
Not done	24	66.7
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Expel clots.</b>		
Done	18	50.0
Not done	18	50.0
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Administer Oxytocin 20 units.</b>		
Done	21	58.3
Not done	15	41.7
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Identify the cause.</b>		
Done	35	97.2
Not done	1	2.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Raise the foot end of bed.</b>		
Not done	36	100
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Commence an intravenous infusion using Ringer's Lactate/Saline.</b>		
Done	27	75
Not done	9	25
<b>Total</b>	<b>36</b>	<b>100</b>

According to Table 4.8, over a quarter of respondents 38.9% (14) did not call for help during PPH management, 36.1% (13) did not rub a contraction and most, 66.7% (24) did not empty the bladder. Half, 50% (18) expelled clots during PPH management, less than half, 41.7% (15) did not administer the recommended units of oxytocin and none of the respondents raised the foot end of the bed in managing PPH.

**Table 4.9: Respondents' practices in the management of PPH (n=36)**

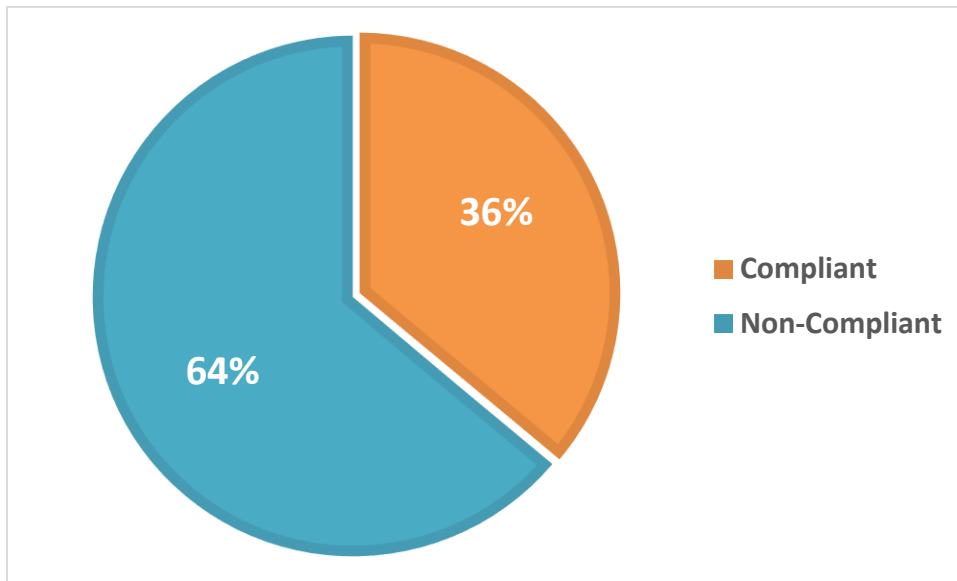
WHO PPH management recommendations	Frequency	Percentage
<b>Check pulse and blood pressure.</b>		
Done	24	66.7
Not done	12	33.3
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Give prophylactic antibiotics.</b>		
Done	8	22.2
Not done	28	77.8
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Bimanual compression (if above measures fail).</b>		
Done	5	13.9
No need	31	86.1
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Obtain blood for haemoglobin, grouping and cross matching (transfuse).</b>		
Done	19	52.8
Not done	17	47.2
<b>Total</b>	<b>36</b>	<b>100</b>
<b>Refer the woman for advanced care (if need be).</b>		
Done	9	25.0
Not done	2	5.6
Not applicable	25	69.4
<b>Total</b>	<b>36</b>	<b>100</b>

Table 4.9 shows that, 33.3% (12) of the respondents did not check the pulse or blood pressure, 77.8% (28) did not give any prophylactic antibiotics and less than half, 47.2% (17) did not obtain any blood for haemoglobin, grouping and cross matching. A quarter, 25% (9) of respondents from health centres had referred PPH cases to Saint Francis Hospital while most, 69.4% (25) worked at the hospital hence did not refer any PPH cases.

**Table 4.10: Respondents overall practices in the management of PPH (n=36)**

Overall practices in the management of PPH	Frequency	Percentage
Good	12	33.3
Poor	24	66.7
<b>Total</b>	<b>36</b>	<b>100</b>

Table 4.10 shows that overall, most, 66.7% (24) of the respondents expressed poor practices in the, management of PPH while over quarter had good practices.



**Figure 4.3: Overall compliance of respondents to guidelines for prevention and management of PPH (n=36)**

Figure 4.3 shows that most, 64% (23) of the respondents did not comply to guidelines for prevention and management of PPH while over quarter 36% (13) did comply.

#### **4.5. Section D: Availability of resources in PPH prevention and management**

This section provides information on the availability of resources in prevention and management of PPH from 13 study institutions.

**Table 4.11: Availability of resources in the prevention and management of PPH (n=13)**

Available resources in PPH prevention and management	Frequency	Percentage
<b>Benzyl penicillin</b>		
Available	10	77.0
Not available	3	23.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Metronidazole</b>		
Available	2	15.0
Not available	11	85.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Gentamicin</b>		
Available	4	31.0
Not available	9	69.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Oxytocin</b>		
Available	11	85.0
Not available	2	15.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Misoprostol</b>		
Available	2	15.0
Not available	11	85.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Ringers lactate/Normal saline</b>		
Available	12	92.0
Not available	1	8.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Dextrose</b>		
Available	7	54.0
Not available	6	46.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Blood/blood storage facility</b>		
Available	1	8.0
Not available	12	92.0
<b>Total</b>	<b>13</b>	<b>100</b>

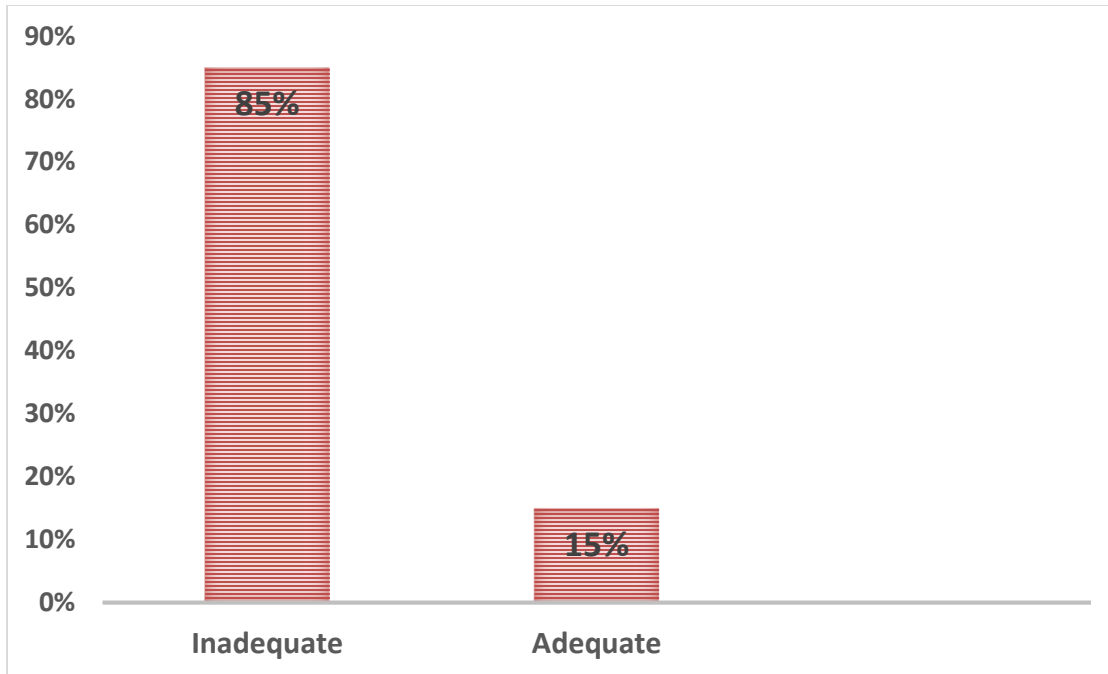
Table 4.11 shows that most facilities, 85% (11) did not have metronidazole and misoprostol, 69% (9) did not have gentamicin and less than half, 46% (6) did not have dextrose IV fluid. The majority of facilities, 92% (12) lacked blood storage facilities and did not stock blood.



**Table 4.12: Availability of resources in the prevention and management of PPH (n=13)**

Available resources in PPH prevention and management	Frequency	Percentage
<b>Ambulance</b>		
Available	2	15.0
Not available	11	85.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Needles and syringes</b>		
Available	11	85.0
Not available	2	15.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Catheters</b>		
Available	8	62.0
Not available	5	38.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Surgical gloves</b>		
Available	5	38.0
Not available	8	62.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Measuring jug</b>		
Available	6	46.0
Not available	7	54.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Disinfectants</b>		
Available	10	77.0
Not available	3	23.0
<b>Total</b>	<b>13</b>	<b>100</b>
<b>Ambu-bag and mask</b>		
Available	11	85.0
Not available	2	15.0
<b>Total</b>	<b>13</b>	<b>100</b>

According to Table 4.12, the majority, 85% (11) of the facilities did not have an ambulance stationed at the facility. Most facilities, 62% (8) did not have surgical gloves and over quarter, 38% (5) had no catheters. Over half, 54% (7) of the facilities lacked measuring jugs.



**Figure 4.4: Adequacy of resources in the prevention and management of PPH (n=13)**

Figure 4.4 shows that the majority, 85% (11) of facilities had inadequate resources for prevention and management of PPH, while 15% (2) had adequate resources.

#### **4.6. Section E: Association between variables**

Data in this section presents information of the association between the study variables. To establish the associations, compliance to PPH guidelines was cross tabulated with knowledge, practice and availability of resources.

**Table 4.13: Association between demographic variables and knowledge on PPH prevention and management guidelines**

Demographic variables		Knowledge on PPH prevention and management guidelines.			p-value
		High	Low	Total	
Age	20-35 years	5 (55.6%)	4 (44.4%)	9 (100%)	<b>0.272</b>
	Over 35 years	17 (63%)	10 (37%)	27 (100%)	
Total		22 (61.1%)	14 (38.9%)	36 (100%)	
Gender	Male	9 (75%)	3 (25%)	12 (100%)	<b>0.292</b>
	Female	13 (54.2%)	11 (45.8%)	24 (100%)	
Total		22 (61.1%)	14 (38.9%)	36 (100%)	
Qualification	Enrolled midwife	8 (50%)	8 (50%)	16 (100%)	<b>0.307</b>
	Registered midwife	14 (70%)	6 (30%)	20 (100%)	
Total		22 (61.1%)	14 (38.9%)	36 (100%)	
Length of service	Under 2 years	4 (50%)	4 (50%)	8 (100%)	<b>0.896</b>
	2-5 years	5 (62.5%)	3 (37.5%)	8 (100%)	
	Over 5 years	13 (65%)	7 (35%)	20 (100%)	
Total		22 (61.1%)	14 (38.9%)	36 (100%)	

Table 4.13 shows that age (p-value=0.272), gender (p-value=0.292), professional qualification (p-value=0.307) and length of service (p-value=896) showed no significant association with knowledge on PPH prevention and management guidelines.

**Table 4.14: Association between demographic variables and practices towards PPH prevention and management**

Demographic variables		Practices towards PPH prevention and management			p-value
		Good	Poor	Total	
Age	20-35 years	4 (44.4%)	5 (55.6%)	9 (100%)	0.272
	36-50 years	6 (26%)	17 (74%)	23 (100%)	
	Over 50 years	2 (50%)	2 (50%)	4 (100%)	
Total		12 (33.3%)	24 (66.7%)	36 (100%)	
Gender	Male	5 (41.7%)	7 (58.3%)	12 (100%)	0.453
	Female	7 (29.2%)	17 (70.8%)	24 (100%)	
Total		12 (33.3%)	24 (66.7%)	36 (100%)	
Qualification	Enrolled midwife	4 (25%)	12 (75%)	16 (100%)	0.481
	Registered midwife	8 (40%)	12 (60%)	20 (100%)	
Total		12 (33.3%)	24 (66.7%)	36 (100%)	
Length of service	Under 2 years	5 (62.5%)	3 (37.5%)	8 (100%)	0.134
	2-5 years	1 (12.5%)	7 (87.5%)	8 (100%)	
	Over 5 years	6 (30%)	24 (66.7%)	20 (100%)	
Total		12 (33.3%)	24 (66.7%)	36 (100%)	

Table 4.14 shows that age (p-value=0.272), gender (p-value=0.453), professional qualification (p-value=0.481) and length of service (p-value=134) showed no significant association with practices towards PPH prevention and management.

**Table 4.15: Association between compliance and midwives' knowledge on PPH prevention and management guidelines**

Knowledge on PPH prevention and management guidelines	Compliance to PPH guidelines			p-value
	Yes	No	Total	
High	8 (36.4%)	14 (63.6%)	<b>22 (100%)</b>	<b>0.968</b>
Low	5 (37.5%)	9 (64.3%)	<b>14 (100%)</b>	
<b>Total</b>	<b>13 (36%)</b>	<b>23 (64%)</b>	<b>36 (100%)</b>	

From Table 4.15, there was no significant difference between midwives with high knowledge (63.6%, 14) and those with low knowledge (64.3%, 9) on PPH prevention and management who did not comply to PPH prevention and management guidelines. The relationship between compliance and knowledge was not significant ( $p$ -value=0.968).

**Table 4.16: Association between compliance and midwives' practices in PPH prevention and management**

Practices in PPH prevention and management.	Compliance to PPH guidelines			p-value
	Yes	No	Total	
Good	9 (75%)	3 (25%)	<b>12 (100%)</b>	<b>0.001</b>
Poor	4 (16.7%)	20 (83.3%)	<b>24 (100%)</b>	
<b>Total</b>	<b>13 (36%)</b>	<b>23 (64%)</b>	<b>36 (100%)</b>	

According to Table 4.16, the majority (83.3%, 20) of the midwives with poor practices did not comply to the PPH prevention and management guidelines while most (75%, 9) midwives with good practices were compliant. The relationship between compliance and midwives' practices was significant ( $p$ -value=0.001).

**Table 4.17: Association between compliance and availability of resources in PPH prevention and management**

Availability of resources	Compliance to PPH guidelines			p-value
	Yes	No	Total	
Adequate	10 (40%)	15 (60%)	<b>25 (100%)</b>	<b>0.708</b>
Inadequate	3 (27.3%)	8 (72.7%)	<b>11 (100%)</b>	
<b>Total</b>	<b>13 (36%)</b>	<b>23 (64%)</b>	<b>36 (100%)</b>	

Table 4.17 shows that most (72.7%, 8) midwives who indicated inadequate resources for PPH prevention and management were not compliant to guidelines for prevention and management of PPH. About 60% (15) of those who indicated adequacy of resources did not comply with PPH guidelines. The relationship between compliance and availability of resources was not significant ( $p$ -value=0.708).

**Table 4.18: Binary Logistic Regression adjusted for age, gender, length of service, knowledge, practices and availability of resources with regards to compliance**

Variables		B	S.E.	Exp(B)	95% Confidence Interval		Sig.
					Lower	Upper	
<b>Age</b>	<b>Ref: &gt; 50 years</b>						
	20-35 years	0.223	0.671	1.250	0.336	4.655	0.739
	36-50 years	0.442	0.427	1.556	0.673	3.594	0.301
<b>Length of service</b>	<b>Ref: &lt; 2 years</b>						
	2-5 years	1.099	0.816	3.000	0.606	14.864	0.178
	Over 5 years	0.619	0.469	1.857	0.741	4.655	0.197
<b>Gender</b>	Female	0.511	0.422	1.667	0.729	3.808	0.226
<b>Qualification</b>	RM	0.619	0.469	1.857	0.741	4.655	0.187
<b>Knowledge on PPH</b>	High	0.560	0.443	1.800	0.734	4.172	0.207
<b>Practices</b>	Good	1.609	0.548	5.000	1.709	14.628	0.003
<b>Availability of resources</b>	Inadequate	0.575	0.791	1.778	0.378	8.372	0.467

From Table 4.18, logistic analysis shows that compliance to PPH prevention and management guidelines was 1.556 times higher among those aged 36-50 years and 1.250 among those aged 20-35 years compared to those over 50 years. Compliance was 1.667 times more likely among female midwives compared to their male counterparts. Midwives with a lower length of service (2-5 years) were 3 times more likely to comply to PPH prevention and management guidelines. RMs were 1.857 times more likely to comply to PPH prevention and management guidelines compared to EMs. Compliance increased 1.8 times among midwives with high knowledge and was 5 times more among midwives with good practices towards PPH prevention and management. Midwives from facilities with inadequate resources were 1.778 times more likely to comply to PPH prevention and management guidelines compared to those from facilities with adequate resources.

## CHAPTER FIVE

### DISCUSSION OF FINDINGS

#### 5.0. Introduction

The discussion of the findings is based on the research analysis of the responses and observations from midwives stationed at St. Francis mission hospital, Kagoro, Katete urban, Chibolya, Vlamukoko, Chimutende, Mutetezi, Undi, Kafunka, Kampambe, Nyembe, Kafumbwe and Katiula health facilities. Out of the 47 calculated sample size, 36 midwives participated because some were on leave and off duty during the period of data collection, thus a 75% response rate was achieved. The study purpose was to evaluate midwives' compliance to guidelines for prevention and management of PPH in Katete district. The outline of the discussion consists of the characteristics of the sample, discussion of each variable, the implications of the findings to the nursing care system, recommendations, dissemination of findings, limitation of the findings and the conclusion.

#### 5.1: Characteristics of the participants.

The Zambia Demographic and Health Survey (ZDHS) shows that the majority of the Zambian population is below 50 years (CSO,2019). This was reflected in the age characteristic of the respondents in this study in the sense that the majority were aged below 50 years (Table No. 4.1). Although age had no statistical significant effect on compliance, logistical analysis showed that compliance was highest among midwives aged 36-50 years compared to other age groups (Table 4.18). This suggests that interventions targeting at preventing and managing PPH should focus more on midwives ages below 36 years and older than 50 years. The number of female midwives who participated in the study was in line with the WHO (2016) report that stated that nursing and midwifery professions were dominated by females. Gender showed no statistical significance with compliance. However, the Odds of compliance to PPH prevention and management guidelines were 1.667 times more among female midwives compared to males. Thus, the finding suggests male midwives need more attention in order to improve their compliance to PPH prevention and management. The number of RMs who participated in the study (Table 4.1) was higher than that of the 41% who participated in the Nigeria study by Ogundeko (2017) on knowledge and management of PPH among skilled birth attendants. RMs were 1.857 times more likely to comply to PPH prevention and management guidelines compared to EMs. This implies that acquisition of more knowledge and skills through having a higher qualification increased the likelihood of



compliance. Hence, encouraging continuous professional development may significantly contribute to compliance to PPH prevention and management guidelines among midwives. However, level of qualification showed no significant association with compliance.

The findings on work experienced showed that 55.6% of the midwives had over 5 years work experience, indicating that a significant number (44.4%) of midwives in Katete district were recently qualified; this could influence their compliance to PPH prevention and management guidelines (Table No. 4.1) due to minimal exposure. Ironically, the length of service was not significantly associated with compliance, and the findings showed that midwives with a lower length of service (2-5 years) were 3 times more likely to comply to PPH prevention and management guidelines. This could possibly be due to their eagerness to practice in accordance with provided guidelines and application of freshly gained knowledge from school compared to midwives who have worked longer and possibly developed poor practices or fail to adopt to new guidelines.

## **5.2: Knowledge of midwives on PPH prevention and management guidelines.**

The findings revealed that most midwives did not know that the administration of oral misoprostol by lay health workers is recommended for the prevention of PPH, and a quarter was not aware that CCT is recommended even in the absence of skilled attendants (Table 4.2). This unawareness amongst midwives could have led to wrong education of safe motherhood support groups especially among those in rural health facilities, which has a possibility of contributing to poor PPH prevention. Poor knowledge regarding cord clamping was observed in over a quarter of the midwives as they expressed ignorance on the recommendation of early cord clamping (<1 minute after birth) depending on the neonate's condition (Table 4.3). Contrary to the guidelines, the majority of the midwives indicated that sustained uterine massage is a recommended intervention to prevent PPH in women who have received prophylactic oxytocin, and over half were not aware that CCT is the recommended method for removal of the placenta in caesarean section (Table 4.3). The observed deficiency in knowledge on PPH prevention methods poses a risk to mothers during labour as lack of knowledge is associated with high incidents of PPH and consequently death (Bulundi et al., 2017). Therefore, midwives in Katete need more orientation to the recommended guidelines.

Although over half of the midwives were aware that a variety of uterotonics other than oxytocin were recommended for the treatment of PPH, about 44.4% only knew oxytocin as the recommended uterotonic in PPH management (Table 4.4). This lack of knowledge could have led to improper management of women resulting in poor maternal outcomes. The poor knowledge regarding PPH management was also observed by Woiski et al. (2015) who revealed that most midwives did not know about PPH management protocols. Furthermore, poor knowledge was observed on the use of tranexamic acid, the use of uterine artery embolisation, the use of non-pneumatic anti-shock garments, use of uterine packing and ergometrine in retained placenta, and most had poor knowledge on the use of prostaglandins for the management of retained placenta (Table 4.3). The poor knowledge among midwives was in line with Bulundi et al. (2017) who noted that knowledge and opinions on standard guidelines differed among midwives, as most were reported to never have heard of the anti-shock garment. These variations in opinion pose a great risk to the lives of women during childbirth, hence, needs constant evaluation.

Despite these variations among midwives, overall, most midwives expressed good knowledge on PPH prevention and management guidelines (Table 4.3). This could be attributed to the presence of simplified flow charts in most facilities regarding obstetric care; hence, most midwives were aware of some of the guidelines in PPH prevention and management. Being knowledgeable in the art of using the available resources to prevent and manage PPH can abate PPH related mortalities (Population Report, 2012). Hence, knowledge enhancement is necessary in the district to eliminate potential mismanagement of women during delivery. Although knowledge in the study had no significant effects on compliance, logistic analysis showed that compliance increased 1.8 times among midwives with high knowledge (Table 4.18). This could have resulted from the understanding of the importance of adhering to guidelines among knowledgeable midwives, which enhanced their compliance.

Despite most midwives expressing good knowledge, over 64% had poor compliance to PPH prevention and management guidelines. This finding could have resulted from midwives being used to routine practices despite having knowledge on guidelines. This was contrary to most studies that reported significant effect of knowledge on compliance to guidelines (Asuke et al., 2016; Woiski et al., 2015; Sosa et al., 2010). However, knowledge on PPH prevention and management showed no significant association with age, gender, professional qualification or

length of service. In this regard, an assessment of knowledge of strategies used in the prevention and management of PPH by midwives in Nigeria also found no significant association between the professional qualification of respondents and their knowledge on PPH (Onasoga et al., 2012).

### **5.3: Midwives' practices in prevention and management of PPH.**

Regarding PPH prevention practices, half of the midwives had poor practices. It was observed that slightly over half of the respondents did not palpate the uterus to exclude undiagnosed twin. The majority did not indicate emptying of the bladder as one of practices in the prevention and management of PPH during childbirth and less than half indicated never using CCT to deliver the placenta (Table 4.7). Such practices pose a risk for PPH to women during labour. Prata et al. (2013) revealed that performing CCT significantly reduced haemorrhage risks by nearly 50% as compared to without it. It was further noted that most of the respondents did not remove pieces of membranes using a sponge forcep as recommended in the guidelines, which could have been due to lack of appropriate instruments as the checklists for most facilities revealed inadequate resources, posing further risk for PPH and infections (Table 4.7). Poor AMSTL practices were further observed in over a quarter of the respondents as they did not examine the expelled products for completeness. The findings corresponded with Sosa et al. (2010) who also noted that the manner in which AMSTL interventions were carried out was of compromised quality, leading to poor maternal management and consequently detrimental outcomes. However, the majority of midwives administered oxytocin and examined the upper vagina and cervix during AMSTL. This corresponded to the good AMSTL practices observed in half of the respondents, which could be attributed to good knowledge on PPH prevention and management observed in most midwives in the study. The midwives with high knowledge were likely to express good practices.

Further findings showed that overall, most of the midwives expressed poor practices in the management of PPH, as over a quarter did not call for help during a PPH emergency, most likely due to the shortage of supporting staff, since most health facilities did not have adequate personnel. More poor practices in PPH management were observed as over a quarter did not rub a contraction, most did not empty the bladder despite most institutions reporting availability of catheters, half did not expel clots during PPH management, and less than half did not administer the recommended units of oxytocin (Table 4.8). The findings were consistent with Smith et al. (2013) who reported that oxytocin was only used in 44% of the cases that were studied. This expressed

compromised care quality regarding PPH management as it defied the WHO recommendations. None of the midwives raised the foot end of the bed in managing PPH, which could be related to the unavailability of adjustable beds and lack of awareness on the necessity of this intervention in managing PPH.

Although the WHO recommends checking vitals, giving prophylactic antibiotics and obtaining bloods as part of PPH management, over a quarter of the midwives did not check the pulse and blood pressure of clients, the majority did not give any prophylactic antibiotics to PPH mothers and less than half did not obtain any blood for haemoglobin, grouping and cross matching. Due to limited human resource, most midwives especially those from health facilities in the outskirts of Katete district could have been overwhelmed doing several interventions at once hence could have concentrated more on other interventions such as identifying the cause and fluid resuscitation which was done by most midwives compared to any other interventions. In the same manner MoH (2015) revealed that the absolute shortages of health workers, inequities in the distribution of health workers and skills were a major obstacle to the provision of quality services and to the achievement of the national health objectives.

However, the omission of such recommendations could have compromised the management of women experiencing PPH which could have contributed to maternal mortalities. In low resource settings, Prata et al. (2013) also revealed suboptimal PPH management in a majority of women who died after giving birth. In the study, the majority of the midwives with poor practices did not comply to the PPH prevention and management guidelines compared to those with good practices. The relationship between compliance and midwives' practices was significant. In agreement, logistic analysis showed that respondents with good practices towards PPH prevention and management were five times more likely to comply with recommended guidelines (Table 4.18). Therefore, practices towards PPH prevention and management need to improve in order to enhance midwives' compliance to set guidelines for maternal care. This finding was in line with Prata et al. (2013) who reported a significant reduction in the incidence of PPH compared with good practices by midwives and health personnel involved in obstetric care.

A study on prevention and management of PPH by midwives in Nigeria by Onasoga et al. (2012) found no significant association between professional qualification and demographic characteristics of respondents with their practices in the prevention and management of PPH. This

was consistent with this study's findings as practices towards PPH prevention and management showed no significant association with age, gender, professional qualification or length of service.

#### **5.4: Midwives' compliance to guidelines for prevention and management of PPH**

This study established that in Katete district, most of the midwives were not compliant with guidelines for prevention and management of PPH; while over a quarter were (Table 4.15). In line with this, half of the midwives had poor practices in AMTSL and most expressed poor practices in the management of PPH. The non-compliance observed in the district could be the reason for the high PPH cases and related mortalities observed in the district, as Sutherland et al. (2014) indicated that adherence to PPH prevention and management guidelines has greater potential to avert the high mortality incidences associated with PPH. Hence the non-adherence observed in Katete district could be implicated for the PPH cases and mortality trend. In this study, only midwives' practices was found to be significantly related to midwives' compliance. Therefore, midwives' practices in PPH prevention and management should be considered key, if PPH related mortalities are to reduce in the district. In addition, the poor compliance observed in this study has potential to derail women from seeking maternal health care services as increase in poor maternal outcomes may lead to women having less confidence in maternal care being provided, thereby worsening the current trend.

According to MoH (2015) and NAZ (2014), poor practices and poor management of PPH are related to weak logistics management in the supply of essential drugs and medical supplies, such as gloves, disinfectants, sutures, uterotonic drugs, blood products, non-pneumatic garment, delivery packs, vacuum extractors, manual vacuum aspiration sets, and delivery instruments. However, availability of resources in this study showed no significant association with compliance to PPH prevention and management guidelines. Despite the insignificance of resource availability, it should be noted that inadequate resources have potential to limit the scope of implementing appropriate interventions by midwives when faced with PPH cases, leading to poor maternal outcomes.

Although the level of training and knowledge of guidelines were not significantly associated to compliance. NAZ (2014) revealed that lack of in-service training due to shortage of staffs in the facilities deprives the staff from acquiring knowledge on current information about PPH

prevention and management, which leads to poor maternal outcomes. Therefore, knowledge on PPH which is related to level of training is likely to influence midwives' compliance to PPH prevention and management (Bulndi et al., 2017). How long a midwife has worked may be associated with gaining of expertise and knowledge which can lead to good PPH management and consequently good maternal outcomes (Ogundeko, 2017). However, in this study, length of service showed no significant association.

### **5.5: Availability of resources for prevention and management of PPH**

On average, a large proportion of facilities had inadequate resources available for prevention and management of PPH (Figure 4.4). According to MoH (2015), Zambia faces lack of resources in maternal health, hence, negatively affecting the outcome of obstetric care. The lack of necessary resources can lead to high maternal mortalities from uncontrolled excessive bleeding. Furthermore, most facilities did not have necessary drugs such as metronidazole and misoprostol, most did not have gentamicin and less than half did not have IV fluids such as dextrose. Corresponding to these findings, Levine et al. (2008) also found notable gaps in medication supplies and equipment in the majority of health facilities in Central province of Zambia, and that antibiotic options were inadequate. The unavailability and inadequacy of antibiotics, fluids and uterotonics in health facilities in Katete district presents challenges in the management of PPH and prevention of infections. In Katete district, only St. Francis hospital has a blood storage facility while the majority of facilities lacked such facilities. This finding could contribute to the reasons why 47% of the midwives did not obtain any bloods from women for grouping and cross matching before referring them to the hospital. In line with this, Bulundi et al. (2017) concluded that the increasing prevalence of PPH over the years could be due to lack of safe blood banking and other necessary resources in developing countries. Therefore, inadequacies observed could possibly affect the compliance of midwives to standard guidelines thereby affecting maternal care outcomes.

Furthermore, most facilities did not have surgical gloves and over a quarter had no catheters, while slightly over half of the facilities lacked measuring jugs. The unavailability of these necessities had potential to compromise care rendered in PPH prevention and management in that midwives were subjected to visual estimation of blood loss, which is an inaccurate method of determining blood loss. The lack of surgical gloves poses a greater risk for infection amongst women since midwives may have resorted to using clean gloves and most facilities lacked prophylactic antibiotics. The lack of catheters could partly explain why most midwives reported having never

emptied the bladder during PPH prevention and management, which could have affected uterine contractions thereby prolonging bleeding. In line with these findings, a study by Gabrysch et al. (2011) on availability and distribution of and geographic access to EmOC in Zambia found that, most health facilities in the country were unable to provide adequate obstetric care due to lack of basic resources. In contrast, inadequate resources were not among identified obstacles to PPH prevention and management in a study on influencing factors for high quality care on PPH in the Netherlands (Woiski et al., 2015).

In Katete district only two facilities had ambulances stationed at the facilities while the majority had to call for one from the district whenever referring a mother was deemed necessary. This finding was slightly lower than in a study by Bulundi et al. (2017) where 84% of respondents indicated that there was no provision for an ambulance or transportation in cases of emergencies. The lack of timely transport logistics could have resulted in delayed referrals, contributing to poor maternal outcomes observed in Katete district. Lack of readily available transportation with lower perceived risk for further complications could explain why only 25% of facilities had referred women to Saint Francis hospital for further management (Table 4.5). In line with this finding, Chinomnso et al. (2016) also reported that 30% of respondents in this study were not referred to higher level of care due to lack of transportation in the PHC facilities. However, the relationship between compliance and availability of resources was not significant. Despite this, logistic analysis showed that the Odds of compliance were 1.778 times more among midwives from facilities with inadequate resources than those with adequate resources. This finding could have resulted from midwife's ability to adjust to practicing under limited resources, hence, the limitation exhibited less effect on compliance. Moreover, since the majority of facilities that had inadequate resources were PHC facilities, such as health post and health centres, most of the midwives were able to follow most guidelines in PPH prevention and management up to when they had to refer clients, hence, most interventions were undertaken by midwives from St Francis Mission hospital. This implied that midwives from PHC facilities had fewer interventions to undertake in cases of PPH before they could refer patients; hence, they were more likely to comply than midwives from second level facility, despite having inadequate resources. Contrary to this finding, MoH (2015) reported that the lack of resources in maternal health may negatively affect the outcome of obstetric care. Studies by Sosa et al. (2010) and Bulundi et al. (2017) also noted a significant effect of resources on PPH management and prevention, contrary to the scenario in Katete district. Despite

the insignificance noted in the district, it should be noted that resources are a necessity in adhering to recommended guidelines hence measures to replenish necessary resources must be undertaken. Therefore, provision of adequate resources must be considered if compliance is to be enhanced among midwives.

## **5.6. Implication of findings to the health care system**

### **5.6.1. Nursing practice**

Midwives are among health care providers trained in prevention and management of PPH and have a leading role in delivering quality obstetric care to women, consequently reducing PPH cases and related mortality. The findings in this study showed a significant effect of midwives' practices on compliance to PPH management guidelines. Therefore, in order to reduce PPH incidences observed in Katete district, midwives need to adhere to recommended guidelines. Change of poor PPH practices observed in most midwives can lead to improved obstetric outcomes.

### **5.6.2. Nursing administration**

For effective implementation of PPH prevention and management guidelines, the nursing management should aim at improving the practices of midwives through increasing staffing levels and provision of necessary resources. Management needs to orient midwives to guidelines for the prevention and management of PPH in order to enhance compliance to the guidelines as poor knowledge was observed in over a quarter of the midwives with regard to the guidelines.

### **5.6.3. Nursing Education**

Study findings showed that a significant number of midwives had poor practices and low knowledge on PPH management and prevention guidelines. This could have contributed to poor PPH management and outcomes. Therefore, education on recommended guidelines is necessary to enhance compliance to PPH management guidelines.



#### **5.6.4. Nursing Research**

The study showed that very little knowledge on midwives' compliance to PPH prevention and management guidelines exist in Zambia. Therefore, midwife researchers should be encouraged to research more on the topic to help find better sustainable ways of enhancing prevention and management of PPH among women in Zambia. Improved obstetric care may lead to improved maternal outcomes and reduction of maternal mortalities in the country. In addition, nursing researchers should replicate the study in other settings to find out determinants of compliance among midwives in different settings for comparison of findings.

#### **5.7. Dissemination of findings**

A copy of the research findings will be submitted to UNZA, School of Nursing Sciences and the medical library. The findings will also be disseminated through distributing summaries of findings and recommendations to every health facility in the district that participated in the study and other interested stakeholders such as the Provincial Health Office (PHO). The researcher also intends to have a meeting with the District Health Office (DHO) to inform them of the study findings and the recommendations. A manuscript of the study will be sent to a peer reviewed journal for publication.

#### **5.8. Limitations of the study**

This study was carried out in Katete district. Whereas the findings are valid and reliable for the facilities in the district, generalised should be done with caution because of contextual disparities.

## **5.9 Recommendations**

- a) The study showed that availability of resources increased compliance among midwives; therefore, it is recommended that the district and local managements of the health facilities in the district need to ensure that uterotonics, fluids, antibiotics, and other resources needed are procured on time and always available and provided to every woman during delivery and PPH management.
- b) Since midwives' practices significantly influenced their compliance, frequent auditing of midwives' practices and provision of mentorship in Katete district is necessary to evaluate and enhance compliance to set guidelines so as to improve maternal outcomes and abate the cases of PPH observed in the district.
- c) Longer length of service and being male had less Odds of compliance; hence managements of the health facilities need to consider these groups for competence-based training to enhance their PPH prevention and management skills.
- d) Only two health facilities out of 13 had ambulances stationed at the facility, therefore, the government through the MoH should ensure that each health facility providing maternity services has an ambulance for easy and timely referral for further management to prevent delays which may cost lives of mothers experiencing PPH.

## **5.10 Conclusion**

The study established that most midwives (64%) were not complying to the guidelines for prevention and management of PPH, due to poor practices (50% in prevention and 66.7% in management of PPH), and inadequate resources in most (85%) facilities.

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## **7.0. Appendices**

### **Appendix 1: Participant Information Sheet**

#### **Topic: Midwives' Compliance to Guidelines for Prevention and Management of Postpartum Haemorrhage in Katete District Eastern Province, Zambia**

My names are Monica S.B Zimba Chibeka student pursuing a Master of Science in Nursing Degree, at the University of Zambia, School of Nursing. In partial fulfilment of my training in Master of Science Nursing in Midwifery and Women's Health Degree program, I'm required to undertake a research project of which my topic is stated above. You are conveniently selected for this study based on your availability at the time of data collection. However, your participation is voluntary and you can withdraw at any stage if you wish even if after consenting.

#### **Purpose of the study**

This study wishes to evaluate Midwives' Compliance to Guidelines for Prevention and Management of Postpartum Haemorrhage in Katete District to find out midwives' practices towards PPH prevention and care. Apart from being observed using a checklist, you will be expected to give information on your demographic data and knowledge in the prevention/management of PPH and third stage of labour. If you are not sure or you think you may leave any question unanswered for personal reasons you may feel free to do so. Any information given will be kept in confidence and no name will be written on the interview schedule guide or checklist. The information obtained will help the policy makers and implementers to understand the factors contributing to high mortalities due to PPH and formulate measures that will improve the trend. The interview may only take 10 minutes or less while most of the time will be spent on observations to leave you to attend to work. If you feel stressed please let me know and I will attend to your needs accordingly.

#### **Risks and discomforts**

There is no risk involved in participating in this study despite taking part of your time. If any of the questions seem to be sensitive and personal and where clarification is sought, help will be rendered.

## **Benefits**

In this study, there will be no monetary gain; however, the information that you will give will help policy makers to improve maternal health care outcomes. Furthermore, the information obtained from this study will be used to come up with measures that enhance health care provider's compliance, knowledge and understanding on various PPH interventions.

If you are willing to participate in this study, you will be asked to sign consent or thumb print for agreement. Please ask where you are not clear for clarification.

**Appendix II: Consent Form**

**Topic: Midwives’ Compliance to Guidelines for Prevention and Management of Postpartum Haemorrhage in Katete District Eastern Province, Zambia**

I have been explained to and I understand the nature, confidentiality, purpose, benefits, risks and discomforts of the research in which I have been requested to participate. I also understand that taking part in this study is purely voluntary. I further understand that even after having agreed to take part in this study, I can at any time withdraw without having to give an explanation.

The opportunity to ask questions about the research was given and I have been answered to my satisfaction.

I therefore agree to participate.

I .....here by called the respondent understands the guidelines of this study and I am willing to participate in the study.

**Signature/ thumb print** of respondent..... Date .....

**Witness** (Researcher/Assistant) ..... Date.....

**Persons to Contact for Problems or Questions**

1. Monica S.B. Zimba-Chibeka, University of Zambia, School of Nursing Sciences, P.O. Box 50110/. Phone no: +260-975373614; Email: monicachibeka@yahoo.com
2. The Chairperson, University of Zambia, School of Medicine, Research Ethics Committee, P.O. Box 50110, Lusaka. Phone No.: +260-1-256067; E-mail: [unzarec@unza.zm](mailto:unzarec@unza.zm).

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF NURSING SCIENCES**  
**STRUCTURED QUESTIONNAIRE**

**Midwives' Compliance to Guidelines for Prevention and  
Management of Postpartum Haemorrhage in Katete District  
Eastern Province, Zambia**

**DATE OF INTERVIEW:** .....

**PLACE OF INTERVIEW:** .....

**NAME OF INTERVIEWER:** .....

**SERIAL NUMBER:** .....

**INSTRUCTIONS TO RESPONDENTS**

1. Do not write your name on this interview schedule.
2. For questions with alternatives, **Circle** the chosen response.
3. For the open ended questions, write your response in the space provided.
4. Answer all questions.
5. Write all responses honestly and clearly.

**SECTION A: DEMOGRAPHIC DATA**

1. Age.....

2. Gender .....

- a) Male
- b) Female

4. Professional qualification

- a) Enrolled Midwife
- b) Registered Midwife
- c) Enrolled nurse
- d) Registered nurse
- e) Others (specify) .....

5. Indicate your length of service.....

**SECTION B: MIDWIFE’S KNOWLEDGE ON WHOPPH PREVENTION GUIDELINES. (Tick were applicable)**

<b>WHO recommendations for prevention of PPH</b>	<b>True</b>	<b>False</b>	<b>I Don't Know</b>
1. The use of uterotonics for the prevention of PPH during the third stage of labour is recommended for all births			
2. Oxytocin is the recommended uterotonics drug for the prevention of PPH.			
3. In settings where oxytocin is unavailable, the use of other injectable uterotonics or oral misoprostol is recommended.			
4. In settings where skilled birth attendants are not present, and oxytocin is unavailable, the administration of oral misoprostol by			

community health care workers and lay health workers is recommended for the prevention of PPH.			
5. In settings where skilled birth attendants are available, CCT is recommended for vaginal births if the care provider and the parturient woman regard a small reduction in blood loss and a small reduction in the duration of the third stage of labour as important			
6. In settings where skilled birth attendants are unavailable, CCT is not recommended.			
7. Late cord clamping (performed after 1 to 3 minutes after birth) is recommended for all births while initiating simultaneous essential newborn care			
8. Early cord clamping (<1 minute after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation.			
9. Sustained uterine massage is not recommended as an intervention to prevent PPH in women who have received prophylactic oxytocin.			
10. Postpartum abdominal uterine tonus assessment for early identification of uterine atony is recommended for all women.			
11. Oxytocin (IV or IM) is the recommended uterotonic drug for the prevention of PPH in caesarean section.			
12. Controlled cord traction is the recommended method for removal of the placenta in caesarean section.			

**SECTION C: MIDWIFE'S KNOWLEDGE ON WHO PPH MANAGEMENT INTERVENTION GUIDELINES. (Tick were applicable)**

<b>WHO recommendations for management/treatment of PPH</b>	<b>True</b>	<b>False</b>	<b>I Don't Know</b>
13. Intravenous oxytocin alone is the recommended uterotonic drug for the treatment of PPH.			
14. If intravenous oxytocin is unavailable, or if the bleeding does not respond to oxytocin, the use of intravenous ergometrine, oxytocin-ergometrine fixed dose, or a prostaglandin drug is recommended.			
15. The use of isotonic crystalloids is recommended in preference to the use of colloids for the initial intravenous fluid resuscitation of women with PPH			
16. The use of tranexamic acid is recommended for the treatment of PPH if oxytocin and other uterotonics fail to stop bleeding or if it is thought that the bleeding may be partly due to trauma.			
17. Uterine massage is recommended for the treatment of PPH.			
18. If women do not respond to treatment using uterotonics, or if uterotonics are unavailable, the use of intrauterine balloon tamponade is recommended for the treatment of PPH due to uterine atony.			
19. If other measures have failed and if the necessary resources are available, the use of uterine artery embolization is recommended as a treatment for PPH due to uterine atony			
20. If bleeding does not stop in spite of treatment using uterotonics and other available conservative interventions the use of surgical interventions is recommended.			
21. The use of external aortic and bimanual uterine compression is recommended as a temporizing measure until appropriate care is available for the treatment of PPH due to uterine atony.			
22. The use of non-pneumatic anti-shock garments is recommended as a temporizing measure until appropriate care is available.			

24. The use of uterine packing is not recommended for the treatment of PPH due to uterine atony after vaginal birth.			
25. If the placenta is not expelled spontaneously, the use of IV/IM oxytocin (10 IU) in combination with controlled cord traction is recommended.			
26. The use of ergometrine for the management of retained placenta is not recommended.			
27. The use of prostaglandin E2 alpha (dinoprostone or sulprostone) for the management of retained placenta is not recommended.			
28. A single dose of antibiotics (ampicillin or first-generation cephalosporin) is recommended if manual removal of the placenta is practiced.			

**Thank you for your co-operation and participation**



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF NURSING SCIENCES  
OBSERVATIONAL CHECKLIST**

**Midwives' Compliance to Guidelines for Prevention and  
Management of Postpartum Haemorrhage in Katete District  
Eastern Province, Zambia**

**DATE OF INTERVIEW:** .....

**PLACE OF INTERVIEW:** .....

**NAME OF INTERVIEWER:** .....

**SERIAL NUMBER:** .....

**Instructions**

In this section of data collection, Practices and availability of resources in the prevention and management of PPH will be assessed.

**SECTION A: MIDWIFE’S PRACTICES IN PPH PREVENTION AND MANAGEMENT-  
(OBSERVATION CHECKLIST)**

<b>AMSTL protocol</b>	<b>Done</b>	<b>Not Done</b>
1. Palpate the uterus to exclude undiagnosed twin		
2. Administer 10 units Oxytocin IM within a minute of delivery of the baby		
3. Empty the bladder		
4. Clamp the cord		
5. Apply counter pressure above the pubic bone using one hand to stabilize the uterus		
6. After a strong uterine contraction, the cord is pulled downward		
7. Release traction on the cord between contractions		
8. Stop traction when there is resistance		
9. Hold placenta in two hands and rope the membranes		
10. Examine the upper vagina and cervix using a gloved hand		
11. Remove pieces of membranes with a sponge forceps		
12. Examine the expelled products for completeness		
13. Refer the woman for retained placenta (if need be)		

<b>PPH management protocol</b>	<b>Done</b>	<b>Not Done</b>
14. Call for help		
15. Rub up a contraction		
16. Empty the bladder		
17. Expel clots		
18. Administer Oxytocin 20 units		
19. Identify the cause		
20. Raise the foot end of bed		
21. Commence an intravenous infusion using Ringer’s Lactate/Saline		
22. Check pulse and blood pressure		

23. Give prophylactic antibiotics		
24. Bimanual compression (if above measures fail)		
25. Obtain blood for haemoglobin, grouping and cross matching (transfuse)		
26. Apply the non-pneumatic anti-shock garment if available		
27. Refer the woman for advanced care (if need be).		

**SECTION B: AVAILABILITY OF RESOURCES IN PPH MANAGEMENT  
/PREVENTION- (OBSERVATION CHECKLIST)**

Essential drugs	Available	Not available
<b>28. Antibiotics</b>		
Benzyl penicillin		
Metronidazole IV		
Gentamicin		
<b>29. Uterotonics</b>		
Oxytocin		
Misoprostol		
<b>30. IV fluids</b>		
Ringers Lactate		
Normal saline		
Dextrose		
Darrow's		
<b>31. Blood supplies</b>		
Blood		
Blood storage facility		
<b>32. Human resource</b>		
Doctors		
Midwives/Nurses		
Clinical officer		

Lab staff		
<b>33. Referral logistics</b>		
Ambulance		
<b>34. Basic Equipment</b>		
Sphygmomanometer		
Stethoscope		
Fetoscope		
Clinical thermometer		
Refrigerator		
Syringes and needles		
Foley's Catheters		
Suture needles and suture material		
Surgical gloves		
Receivers		
Measuring jug		
Disinfectants		
Adult ventilator bag and mask		
Cannulas		

**Thank you for your co-operation and participation**

## Appendix V: Research Budget

S/N	ITEM	QUANTITY	UNIT COST	TOTAL
1	A4 Plain paper rim	04	50	200
2	Pen	20	1	20
3	Pencil	10	1	20
4	Folder	04	15	60
5	Eraser	04	3	12
6	Stapler	01	24	24
7	Staples	1 box	12	12
8	Perforator	01	50	50
9	Correction fluid	02	25	50
10	Flash disk	01	100	100
11	Printer toner cartridge	02	450	900
12	Statistician services (For data entry and analysis)	01	1000	1000
13	Ethics committee review	01	3500	3500
14	Binding of research proposal and report	4 copies	400	1600
16	Contingency	10%	464.80	504.80
<b>TOTAL</b>				<b>K8052.80</b>

### 8.0. Budget Justification

This budget for the research project was planned to facilitate the carrying out of the proposal, it will help meet all cost, which will be encountered in this study to be conducted in Katete District. The costs will include; Research Ethics Committee fee for reviewing the research, stationery which may include; reams of paper, pens, folders and markers, secretarial services and Contingency which is 10% of the total budget. The researcher will be responsible for the funding of the project

## Appendix VI: Permission Letter from Katete DHO

The University of Zambia  
School of Nursing Sciences  
Department of Midwifery and Women's Health  
P. O. Box 50110  
Lusaka  
2<sup>nd</sup> October, 2019

The District Health Officer  
Box 550089  
Katete  
Zambia.

**RE: PERMISSION TO CONDUCT RESEARCH**

With regards to the above stated matter, I am a student pursuing a ~~Master of Science~~ Master of Science in Nursing degree programme at the University of Zambia, School of Nursing Sciences. In partial fulfilment of the award of Master of Science Degree in Midwifery and Women's Health Degree, I am required to undertake a Research Study.

It is on this premise that I write to seek permission to undertake a research within your district on **"Midwives' Compliance to Guidelines for Prevention and Management of Postpartum Haemorrhage in Katete District Eastern Province, Zambia."**

Find attached is the Approval letter from UNZABREC.

Your favorable response to my request will highly be appreciated.

Yours faithfully,  
*M Chibeka*

**Monica S.B Zimba Chibeka (Mrs)**  
Contact Number: 0975373614  
Email Address: [monicachibeka@yahoo.com](mailto:monicachibeka@yahoo.com)  
St Francis College of Nursing and Midwifery

*NO objection*  
*MCH*  
*F/Y/I*

REPUBLIC OF ZAMBIA  
MINISTRY OF HEALTH  
- 2 OCT 2019  
DISTRICT HEALTH DIRECTOR  
KATETE DISTRICT HEALTH OFFICE

**Appendix VII: Permission Letter from Eastern PHO.**

Telephone: 260 (6) 221513

Fax: 260 (6) 221219....



in Reply Please Quote

**REPUBLIC OF ZAMBIA  
MINISTRY OF HEALTH**

**PROVINCIAL HEALTH OFFICE  
EASTERN PROVINCE  
P.O. BOX 510023  
CHIPATA**

26<sup>th</sup> November, 2019

Monica S. B. Zimba Chibeka (Mrs.)  
University of Zambia  
School of Nursing Sciences  
P.O Box 50110  
**LUSAKA**

Re: **PERMISSION TO CONDUCT RESEARCH**

Reference is made to your letter dated 2<sup>nd</sup> October, 2019 where you are seeking for permission to undertake a research in Katete district on ***“Midwives compliance to guide for prevention and Management of postpartum Haemorrhage”***.

As Eastern Provincial Health Office, we have no objection to this as long as the principles and ethics of conducting research are upheld.

A handwritten signature in black ink, appearing to read 'Jairos Mulambya'.

Dr Jairos Mulambya  
Public Health Specialist  
For/ Provincial Health Director  
**EASTERN PROVINCE**

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All correspondences should be addressed to the Provincial Health Director

## Appendix VIII: Permission to Conduct a Pilot Study

The University of Zambia  
School of Nursing Sciences  
Department of Midwifery and Women's Health  
P. O. Box 50110  
Lusaka

The District Health Officer,  
Box 550089  
Sinda,  
Dear Sir / Madam,



### **RE: PERMISSION TO CONDUCT A PILOT STUDY**

With regards to the above stated matter, I am a student pursuing a Master of Science in Nursing degree programme at the University of Zambia, School of Nursing Sciences. In partial fulfillment of the award of Master of Science Degree in Midwifery and Women's Health Degree, I am required to undertake a Research Study.

It is on this premise that I write to seek permission to undertake a pilot study within your district on "**Midwives' Compliance to Guidelines for Prevention and Management of Postpartum Haemorrhage in Katete District Eastern Province, Zambia.**" I will interview 12 respondents in Sinda District.

Find attached is the Approval letter from the UNZAREC.

Your favorable response to my request will highly be appreciated.

Yours faithfully,

*Monica S.B. Chibeka*

**Monica S.B Zimba Chibeka:**

Contact Number: 0975373614

Email Address: [monicachibeka@yahoo.com](mailto:monicachibeka@yahoo.com)

St Francis College of Nursing and Midwifery



## Appendix IX: Permission Letter from UNZABREC



### UNIVERSITY OF ZAMBIA BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067  
Telegrams: UNZA, LUSAKA  
Telex: UNZALU ZA 44370  
Fax: + 260-1-250753  
Federal Assurance No. FWA00000338

Ridgeway Campus  
P.O. Box 50110  
Lusaka, Zambia  
E-mail: [unzarec@unza.zm](mailto:unzarec@unza.zm)  
IRB00001131 of IORG0000774

30<sup>th</sup> September, 2019.

REF. No. 353-2019.

Your REF. No. 353-2019.

Mrs. Monica Chibeka Zimba,  
University of Zambia,  
School of Nursing Sciences,  
P.O Box 50110,  
Lusaka.

Dear Mrs. Zimba,

**RE: "MIDWIVES' COMPLIANCE TO GUIDELINES FOR PREVENTION AND  
MANAGEMENT OF POSTPARTUM HAEMORRHAGE IN KATETE DISTRICT,  
EASTERN PROVINCE, ZAMBIA" (Ref. No. 353-2019)**

The above-mentioned research proposal was presented to the Biomedical Research Ethics Committee on 30<sup>th</sup> September, 2019. The proposal is **approved**. The approval is based on the following documents that were submitted for review:

- a) Study proposal
- b) Questionnaires
- c) Participant Consent Form

**APPROVAL NUMBER : REF. 353-2019**

**This number should be used on all correspondence, consent forms and documents as appropriate.**

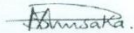
- **APPROVAL DATE : 30<sup>th</sup> September 2019**
- **TYPE OF APPROVAL : Expedited**
- **EXPIRATION DATE OF APPROVAL : 29<sup>th</sup> September 2020**

After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the UNZABREC Offices should be submitted one month before the expiration date for continuing review.

- **SERIOUS ADVERSE EVENT REPORTING:** All SAEs and any other serious challenges/problems having to do with participant welfare, participant safety and study integrity must be reported to UNZABREC within 3 working days using standard forms obtainable from UNZABREC.
- **MODIFICATIONS:** Prior UNZABREC approval using standard forms obtainable from the UNZABREC Offices is required before implementing any changes in the Protocol (including changes in the consent documents).

- **TERMINATION OF STUDY:** On termination of a study, a report must be submitted to the UNZABREC using standard forms obtainable from the UNZABREC Offices.
- **NHRA:** You are advised to obtain final study clearance and approval to conduct research in Zambia from the National Health Research Authority (NHRA) before commencing the research project.
- **QUESTIONS:** Please contact the UNZABREC on Telephone No.256067 or by e-mail on [unzarec@unza.zm](mailto:unzarec@unza.zm).
- **OTHER:** Please be reminded to send in copies of your research findings/results for our records. You're also required to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study. Use the online portal: [unza.rhinno.net](http://unza.rhinno.net) for further submissions.

Yours sincerely,



Sody Mweetwa Munsaka, BSc., MSc., PhD

**CHAIRPERSON**

Tel: +260977925304

E-mail: [s.munsaka@unza.zm](mailto:s.munsaka@unza.zm)

## Appendix X: Permission Letter from NHRA



**NATIONAL HEALTH RESEARCH AUTHORITY**  
Paediatric Centre of Excellence, University Teaching Hospital, P.O. Box 30075, LUSAKA  
Tel: +260211 250309 | Email: [znhrasec@gmail.com](mailto:znhrasec@gmail.com) | [www.nhra.org.zm](http://www.nhra.org.zm)

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Date: 22<sup>nd</sup> July, 2020

The Principal Investigator  
Ms. Monica S.B. Zimba  
University of Zambia  
School of Nursing Sciences  
Department of Midwifery, Women and Child Health  
PO Box 50110  
LUSAKA.

Dear Ms. Zimba,

### Re: Request for Authority to Conduct Research

The National Health Research Authority is in receipt of your request for authority to conduct research titled **"MIDWIVES' COMPLIANCE TO GUIDELINES FOR PREVENTION AND MANAGEMENT OF POSTPARTUM HAEMORRHAGE IN KATETE DISTRICT EASTERN PROVINCE ZAMBIA."** I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been **approved** on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised;
2. Progress updates are provided to NHRA quarterly from the date of commencement of the study;
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country;
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors of Health where the study was being conducted, University leadership, and all key respondents.

Yours sincerely,

Prof. Godfrey Biemba  
Director/CEO  
National Health Research Authority

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All correspondences should be addressed to the Director/CEO National Health Research Authority

**Appendix X: Gantt Chart**

		MONTHS							
		Jan	Feb	Mar	Apr	may	Jun	Jul	Aug
ACTIVITY	RESPONSIBLE PERSON	2019	2019	2019	2019	2019	2019	2019	2019
Submitting of research proposal	Researcher	█							
Clearance from school	Researcher				█				
Pilot study	Researcher					█			
Data collection	Researcher						█		
Data analysis	Researcher						█		
Report writing	Researcher							█	
1 <sup>st</sup> and 2 <sup>nd</sup> Draft Report To The Supervisor	Researcher							█	
Submission of The Final Draft Report	Researcher							█	
Binding of Research Document	Researcher							█	
Submission of Research Document	Researcher							█	