AN ASSESSMENT OF THE PREVALENCE OF AND PREPAREDNESS FOR OBSTETRIC EMERGENCIES: A CASE STUDY OF A PRIVATE CLINIC IN LILONGWE

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A Dissertation Report Submitted in partial fulfillment of the requirements for the degree of Master of Science in Project Management

PROJECT MANAGEMENT

Off Campus Division
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DECLARATION

I, Elizabeth Gwaza declare that this dissertation report is a result of my own work. The references used in this report have been acknowledged. This work has not been submitted to any institution for academic purposes.

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An Assessment of the Prevalence of and Preparedness for Obstetric Emergencies: A Case Study of a Private Clinic in Lilongwe

ABSTRACT

Maternal mortality in Malawi remains one of the highest in the world, at 675 per 100,000 live births, from 1,120 per 100,000 live births in 1990, (WHO, 2013). MDG 5A aims at reducing maternal mortality by 75 percent by 2015. The government of Malawi, through its development partners initiated various projects that focused on Thaddeus and Maine’s ‘Three Delays Model’ to help reduce the MMR. Despite this improvement, there is need to reduce the figures even lower. A descriptive study that used mixed methods to collect secondary and primary data through semi-structured interviews to assess the prevalence of and preparedness for obstetric emergencies at a private clinic in Lilongwe. A probabistic quota sampling method was used to select participants, these comprised of nurses, clinical officers and doctors who provide emergency obstetric care services.

The findings revealed that hemorrhage, (38.1 percent), obstructed/prolonged labour, (41.6 percent) and pre/eclampsia, (ten percent) were the leading obstetric complications. Institutional policies, an enabling environment and support services were factors that facilitate access to quality emergency obstetric care services at the private clinic. A project that will formulate a standard and objective risk and quality management tool for BEmOC as well as CEmOC facilities would help to promote SBAs preparedness for obstetric emergencies.

Key words: Maternal Mortality, Quality, Risk, EmOC
DEDICATION

To my pillars of strength and bundles of joy:

- George, the love of my life,
- Ida, Sarah and Precious, my little angels
- My brothers and sisters, my sources of inspiration
- My nephews and nieces, you give me enough reason to smile
ACKNOWLEDGEMENT

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- Directors, management, staff and study participants of the institution where this study was conducted for their cooperation during the whole process of this study.
- My little sister, Ida, for the technical IT expertise during the time of writing this report.
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ABBREVIATIONS

MDG: Millennium Development Goal
MMR: Maternal Mortality Rate
UN: United Nations
WHO: World Health Organization
MM: Maternal Mortality
MD: Maternal Death
HIV: Human Immunodeficiency Virus
HTC: HIV Testing and Counseling
ART: Anti-Retroviral Therapy
HMIS: Health Management Information Systems
BEmOC: Basic Emergency Obstetric Care
CEmOC: Comprehensive Emergency Obstetric Care
SRH: Sexual and Reproductive Health
TBA: Traditional Birth Attendant
EmOC: Emergency Obstetric Care
MWH: Maternity Waiting Home
DHS: Demographic Health Survey
UN: United Nations
EFQM: European Foundation of Quality Management
SoPK: System of Profound Knowledge
SBA: Skilled Birth Attendants

HIV: Human Immunodeficiency Virus

HTC: HIV Testing and Counseling

ART: Anti-Retroviral Therapy
CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.1 Introduction
This paper is a report on the research study on the prevalence of and preparedness for obstetric emergencies at a private clinic in Lilongwe. The study mainly focused on issues of quality and risk management in relation to the access of comprehensive emergency obstetric care, (CEmOC) services at a private clinic. The findings of this study would help policy makers to come up with strategies that may address the delay in timely access of quality EmOC at healthcare facilities in order to reduce the rising maternal mortality and morbidity rates in the country.

Chapter one gives the study background, problem statement, aim of the study and study objectives and research questions. Chapter two provides relevant literature and the conceptual framework that guided the context and focus of the study. Chapter three reports the methodology used to undertake the study; these include study design, sampling methods, instruments, data collection process, data analysis and study limitations. Chapter four outlines results and discussion of the results. Conclusions and recommendations are provided in chapter five and bibliography forms the last chapter of the paper. All the study instruments and letters of permission are included in the appendices.

1.2 Background of the Study
Public health has become a fundamental global issue. Three out of eight goals in the Millenium Development Goals (MDGs) report are related to health. The 1986 Malawi Ministry of Health Policy statement clearly stipulates its mission as to raise the level of the health status of all Malawians by reducing the incidence of illness and occurrence of deaths in the population through development of a sound delivery system, (Malawi Government, 2012). The Malawi Growth and Development Strategy, (MGDS) II, (2011-
is the overarching medium term strategy designed to attain Malawi’s Vision 20:20. The Health Sector Strategic Plan, (HSSP), (2011-2016) is aligned with the MDGs and guides the implementation of health interventions. It emphasizes increased coverage of high quality Essential Health Package, (EHP) services and strengthening performance of the health system to improve equity, efficiency and quality of healthcare services in Malawi. The healthcare delivery system mainly consists of government facilities, (sixty three percent), Christian Health Association of Malawi, (CHAM), (twenty six percent), and some private for-profit providers, (WHO, 2013). EmONC, (2010) reported that sixty five percent of all institutional births were conducted in EmOC facilities, one percent of these were conducted in private-for-profit healthcare facilities.

Maternal Mortality, (MM) is an urgent problem that highlights the severe global inequality in healthcare delivery, (Ellis et al, 2011). Although most pregnancies are uneventful, approximately fifteen percent of all pregnant women develop a potentially life threatening complication that call for skilled care and some will require a major obstetric intervention to survive, (Gidey, et al, 2013). Latest estimates show that Maternal Deaths (MDs) in ten countries account for sixty percent of the global MM burden. Two regions, Sub-Saharan Africa, (fifty six percent) and Southern Asia, (twenty nine percent) together contribute to eighty five percent of the global MM burden in 2010, (WHO, 2013). The global Maternal Mortality Rate, (MMR) is 210 per 100,000 live births. This is fifteen times higher in developing than developed regions. Sub-Saharan Africa has the highest MMR of 500 per 100,000 live births while in developed region its sixteen per 100,000 live births, (WHO, 2010).

In developing countries where both the mortality and fertility tend to be high, the lifetime risk of MD can be astoundingly high. Situated in the South-East Africa, Malawi is a land locked country with an estimated population of seventeen million people. The Malawi Demographic and Health Survey, (MDHS) indicated that fifteen percent of Malawian women have had no formal education; sixty eight percent of Malawian women are
literate. MDHS (2011) states that Malawi’s Total Fertility Rate, (TFR) is 5.7; this is one of the highest population densities in sub-Saharan Africa, (WHO, 2013). However, this varies with mother’s education and economic status. Women who have no education have over three times as many children as women with secondary or higher education, (6.9 versus 2.1 children per woman).

Malawi’s MMR remains one of the highest in the world, at 675 deaths per 100,000 births in 2013 from 984 deaths per 100,000 births in 2005, (Colbourn et al, 2013, The Nation, 2013, MDHS, 2010). The Government of Malawi through the Reproductive Health Unit, (RHU) of the Ministry of Health and with support from development partners; DFID, WHO, UNICEF, UNFPA and USAID, has implemented several projects in response to the increased MM, because a project is an ideal tool that help to accomplish strategic goals, (Meredith and Mantel, 2012). These include:

- Implementation of safe motherhood project
- Human resource strengthening program
- Development of Obstetrics Life Saving Skills trainers’ and service providers manuals
- In-service training of Health Care Workers, (HCWs) in Obstetrics Life Saving Skills, Infection Prevention and Maternal Death Audit.
- Provision of communication materials
- Increasing the number of (Basic Emergency Obstetric Care) BEmOC sites
- Upgrading healthcare facilities to equip them with standard utilities

A project is a temporary endeavor undertaken to create unique product or service, (PMI, 1994). Projects are undertaken to accomplish specific strategic goals in order to meet specified performance within cost and on schedule, (Meredith and Mantel, 2012). Despite all these efforts MM has continued to rise. Malawi was however rated an achiever for the reduction in the MMR by the Global Leaders Council for Reproductive Health. Despite the improvement, there’s need to bring the figures
even lower to meet the MDG 5A which aims at reducing MMR by seventy five percent from 1990-2015, (UNFPA). Evidence has shown that low quality of healthcare services provided to women during pregnancy, childbirth and postnatal period are the main causes and predisposing factors to MDs, (EmONC, 2010). Studies have suggested an urgent need to further strengthen the provision of quality maternal and newborn healthcare in order to reduce the high MM in Malawi, (Coulbourn et al, 2013, Thorsen et al, 2014). Obstetric complications contribute significantly to MDs, (WHO, 2013). Colbourn et al (2013), emphasize the need for a timely access to quality EmOC to ensure sustainable efforts to prevent and treat maternal complications in order to save lives of mothers in our hospitals during and after child bearing. Chodzaza and Bulltemeier, (2010), postulate that structural and process factors contribute to poor quality EmOC.

Roemer and Mantoga-Aguilar (1988), defined quality health care as the proper performance according to the standards of intervention that are known to be safe, affordable, acceptable to the society in question and that has the ability to produce an impact on mortality and morbidity and malnutrition. The Institute of Medicine, as cited by Lohr, (1990) defined quality in relation to health as the degree to which health services for individuals and population increase the likelihood of desired health outcomes and are consistent with current professional knowledge. Therefore, meeting the needs and expectations of the patient by performing according to required standards helps to achieve the quality of services provided.

Fraser et al, (2010) define risk management as a formal process for identifying, assessing and responding to risk so that the decisions taken about childbirth and its associated care lead to the elimination of undesired outcomes and the promotion of desired outcomes. They further state that risk management is an extension of quality improvement in health services because of the prevention of known risk factor activities. Both techniques aim to improve the quality of patient care. Therefore, proper
preparation for obstetric emergencies by Skilled Birth Attendants, (SBA) may enable them to offer quality Emergency Obstetric Care, (EmOC) services to all clients. This would be best achieved through a project because there is an urgent need to meet government’s strategic goals and MDG 5A by 2015, ‘business as usual’ may not meet the specified performance of SBAs, within cost and on schedule, (PMI, 2010, Meredith and Mantel, 2012).

1.3 Justification of the problem
The availability of EmOC services is well below the minimum United Nations, (UN) target coverage levels in Malawi. Health facilities are reported to have inadequate capacity to respond to and manage women with obstetric emergencies, (Ameh et al, 2012). Lilongwe District registered 32 maternal deaths from 1st January, 2011 to 30th June, 2011, (Thorsen, Sundby & Malata, 2012). The deaths were due to delayed prompt quality EmOC, (Thorsen et al, 2014). Bowie and Guebels, (2013) stated that most obstetric complications cannot be predicted nor prevented but nearly all can be treated successfully. They therefore stated that availability, accessibility and quality of care are crucial determinants for prevention of MM. The inadequacies of hospital systems in responding to emergencies raise serious public health concerns. Norman et al, (2012) stated that the biggest challenge facing the hospitals in their emergency interventions is the lack of pre-emergency and emergency preparedness plans as well as the coordination of the hospital response mechanisms.

Evidence has shown that the provision of suboptimal care by SBAs is perhaps due to lack of vigilance, technical competence, critical decision making skills and commitment, (Thorsen et al, 2014).

1.4 Significance of the Study
Despite efforts by the government of Malawi and its development partners, Malawi’s MMR remains one of the highest in the world. Various projects under the safe
motherhood program have been conducted to address the three delays that cause MM in Malawi; the delay in deciding to seek healthcare, delay in reaching the health facility and delay in receiving quality EmOC. However, evidence has shown that rendering prompt quality EmOC at a health facility remains a major challenge due to process and structural factors, (Combs-Thorsen et al, 2013).

This study will come up with baseline assessment data on SBAs pre-emergency and emergency preparedness for obstetric emergencies which will be used to justify the need for a project that will formulate a standard and objective quality and risk management tool for the private clinic in Lilongwe.

1.5 Purpose of the study
The aim of the study is to assess the prevalence of and SBAs preparedness for obstetric emergencies at a private clinic in Lilongwe.

1.6 Objectives
1. To critically review literature on the prevalence of and SBAs’ preparedness for obstetric emergencies.
2. To assess the prevalence of obstetric emergencies at a private clinic in Lilongwe within the period of 1st February, 2014 to 31st January, 2015.
3. To explore factors that affect timely access to quality EmOC services at a private clinic in Lilongwe.
4. To recommend strategies that will promote SBAs pre-emergency and emergency preparedness measures to improve timely access to EmOC services at a private clinic in Lilongwe in order to reduce maternal morbidity and mortality rate by at least 20%.
1.7 Research Questions

1. What is the prevalence of obstetric emergencies at a private clinic in Lilongwe?
2. What are the factors that affect the timely access of quality EmOC services at a private clinic in Lilongwe?
3. What measures can SBAs at a private clinic in Lilongwe initiate in order to strategize preparedness for obstetric emergencies?

1.8 The Dissertation structure

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1.9 Conclusion
This chapter has highlighted and discussed the background of the study, the problem statement, the significance of carrying out the study, the main aim and specific objectives of the study, some of the research questions to be answered to achieve the research objectives and the layout of different chapters in this research paper. The
following chapter is a review of existing academic theories, models and studies relating to quality management, risk management, MM, quality health care and EmOC.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
Every day, almost 800 women die during pregnancy or child birth, ninety percent of who are from Africa and Asia, (WHO, 2013). Every pregnancy faces a risk. During pregnancy, every woman can develop serious, life threatening complications that require medical care. There is no reliable way to predict the complications. It is therefore essential that all pregnant women have access to high quality obstetric care throughout their pregnancy but especially during and immediately after childbirth when most emergency complications occur. Studies concerning MM in Malawi as well as emergency management were searched primarily via Proquest Central and Google Scholar. Some data was extracted from MDHS reports and UN and WHO reports.

This chapter will critically review literature relevant to the researcher’s topic on an assessment of the prevalence of and preparedness for obstetric emergencies at a private clinic in Lilongwe.; it will highlight an overview of the global and national prevalence of MM, quality and risk management models and SBAs preparedness for obstetric emergencies using Thaddeus and Maine’s three delay model and the conceptual framework that will guide the context and focus of the study will be provided.

2.2 The Global and National Prevalence of MM
Maternal Mortality Ratio, (MMR), is the most common measure of MM, expressed as the number of MDs, per 100,000 live births. MD is the death of a woman while pregnant or within forty two days of termination of pregnancy irrespective of the duration and site of the pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes, (WHO, 2010). MM is an urgent problem that highlights the severe global inequality in healthcare delivery. MMR
is 260 per 100,000 live births worldwide and 640 per 100,000 live births in Sub-Saharan Africa, (WHO, 2007).

The Sub-Saharan Africa and Asia contribute eighty seven percent of MDs globally, (WHO, 2014). Ameh, Msuya, Hofman, et al., (2012), conducted a cross sectional survey in six developing countries, five years before the MDG targets of maternal and neonatal health. These countries; Malawi, Sierra Leone, Nigeria, Bangladesh, Kenya and India were purposively sampled because they were targeted to implement Making it Happen, (MiH) programme which aims at increasing the quality and availability of EmOC. The study participants were 160 facilities designated to provide comprehensive emergency obstetric care, (CEmOC), and 218 facilities designated to provide BEmOC. All health facilities identified in each setting and included in the survey were visited by the research team that comprised of data collectors and members from the Liverpool School of Tropical Medicine, (LSTM) research team. At the facility, managers and clinical leads of the health centres were interviewed; registers were checked for number of deliveries, still births, (SBs), women with obstetric complications and caesarian sections, (CS) performed. The availability of equipment and drugs was also assessed by direct observation.

All data was collected using a predesigned Rapid Assessment Tool (questionnaire) based on UN EmOC assessment manual and criteria. All data collection teams were trained in two days in each country on the use of the Rapid Assessment Tool. Information on availability of signal functions, number of deliveries, SBs, women with obstetric complications and CS performed was collected for a period of three months prior to the visit. SPSS statistics software was used to enter and analyze data for assessment of availability of CEmOC and BEmOC signal functions, all facilities surveyed were included in the analysis. Proportions were calculated for different indicators and used to summarize the data.
The findings of this study revealed that 5/218 (2.3 percent) of facilities designated to offer BEmOC could provide all seven functions required; and 37/160 (23.1 percent), facilities expected to provide CEmOC could provide all nine required signal functions. None of the thirty one districts included in the study met the minimum UN recommended coverage of five functioning EmOC facilities per 500,000 populations. Six percent of Malawian BEmOC designated facilities that were assessed met all the seven signal functions while for CEmOC, only Malawi met the UN requirements with more than twice the number of fully functional CEmOC facilities in place for the population level. Ameh et al, (2012), postulated that there is need to strengthen procurement and distribution of basic drugs and equipment, improve skills of maternity care providers, and ensure the least minimum coverage of facilities as recommended by the UN and to conduct MD audit and provide feedback to improve performance.

Colbourn et al, (2013) conducted a literature review for population based studies that list and justify variables potentially associated with trends in MMR. The researchers searched for studies concerning maternal mortality in Malawi primarily via PubMed and Google Scholar. DHS, UN and WHO reports were also included in the search. 203 articles were retrieved using the search term, "(maternal OR pregnancy-related) AND (mortality OR death) AND Malawi". Facility based studies were excluded, this yielded them four studies, all reporting subnational population based estimates of MMR. All national level MMR were obtained from MDHS and Multiple Indicator Cluster Survey, (MICS). Studies containing all information on date, location and method of survey, case definition of MDs or pregnancy related death, live births and MMR and Confidence Interval, (CI) were considered to be of adequate quality for inclusion in the review.

Not all published studies reported ninety five percent CIs for their estimates, so these were calculated using the Newcombe-Wilson method without continuity correction. A list of possible variables that could have impacted on MMR in Malawi was drawn up using results from modeling studies. The trends in these variables and in intermediate
variables concerned with their mechanisms of action were then compared to the trends in MMR in order to qualitatively and logically assess whether they might have contributed to changes in MMR in Malawi.

The study revealed that MMR increased from 317 per 100,000 live births in 1980 to 748 per 100,000 live births in 1990 then 971 per 100,000 live births in 1999 and reduced to 846 per 100,000 live births in 2005 and 484 per 100,000 live births in 2012. WHO, (2014), and Nove, (2011), agree that Malawi’s MMR has reduced by fifty three from 1990 to 2013 with an annual percentage change of -3.2 percent with estimated MDs of 3400 in 2013. An audit of MDs in southern Region by Muula & Phiri as quoted by Colbourn et al (2013), speculated that the eighty percent increase in MMR from 1992 to 2000 might be due to deteriorating health services resulting from the rise in Human Immunodeficiency Virus, (HIV) prevalence. Hence it could be true to say that the Government’s effort to reduce the impact of HIV through intensifying health education, behavior change, HIV Testing and Counseling, (HTC) and the roll out of Anti-Retroviral Treatment,(ART) may have contributed to the reduction in MMR in 2000s. With fewer mothers dying due to pregnancy related conditions in our hospitals, due to increased hospital deliveries, improved financing and management of the health systems, increased awareness of women of danger signs of pregnancy and increased adult female literacy, there is need to prioritize the quality of routine and emergency care during and after delivery to continue strengthening the health system.

Despite various safe motherhood projects conducted in Malawi since 1994, Malawi’s MMR remains one of the highest in the world, (Colbourn et al, 2013, MDHS, 2010, WHO, 2014). The International Conference on Population and Development and MDG 5A, calls for a reduction in MMR by seventy five percent from 1990 to 2015 by providing timely access to quality EmOC to all those with complications, (UNFPA). The Global Leaders Council for Reproductive Health singled out Malawi as one of the countries that is leading globally in the safe motherhood initiatives that are being implemented,
Despite the improvement, there’s need to bring the figures even lower to meet the MDG 5A this can be done by initiation of more projects that will be well aligned to the overall national strategy on Sexual and Reproductive Health, (SRH). PMI, (1994), defined a project as a temporary endeavor undertaken to create a unique product or service.

2.3 Quality Management in Healthcare

The emergence of the quality culture has not only impacted the industrial sector, but also the service sectors e.g. education, health and social services. Due to changes in the socioeconomic, political, environmental and technological environments, the healthcare sector has become dynamic. This has posed numerous challenges to the quality of healthcare services in the country. In order for healthcare service providers to achieve quality, a clear definition of what is expected needs to be established to measure, control, assure and improve it.

Health is a state of complete physical, mental, social, psychological and spiritual wellbeing and not merely the absence of disease or infirmity, (WHO, 1948). The Concise Oxford Dictionary defines quality as a degree of excellence. Goetsch and Davis (2010) as quoted by Knowles, (2011) define quality as a dynamic state of association with products, services, people, processes and environment that meets or exceeds expectations and helps produce superior value.

It is useful for organizations pursuing quality to have some form of a road map. This needs to be an enabling model which sets out broad principles and the direction of the travel without positioning unnecessary constraints on how exactly to move forward, (Knowles, 2011). The following Quality Management models will be used to give
direction to quality EmOC; European Foundation of Quality Management (EFQM), and Deming’s theory of System of Profound Knowledge (SoPK).

### 2.3.1 European Foundation of Quality Management Model

According to the EFQM model, an excellent organization should be achieving a balanced set of results and progress towards their vision by meeting or exceeding the expectations of stakeholders in both the short and long term. Excellent organizations have leaders who lead with vision, inspiration and integrity, acting as role models for values and ethics and succeeding through people by valuing and empowering staff and seeking a balance between organizational and personal goals, (Knowles, 2011). He further stated that an excellent organization will also actively and systematically nurture creativity and build partnerships for mutual success based on trust with stakeholders including customers, suppliers and the wider society.

![Figure 1: The EFQM Model](image)
Enablers are those processes, systems and behaviors that need to be in place and managed to deliver excellence. These include leadership, strategy, people, partnerships and resources, processes, products and services. Results provide the measure of actual achievement of improved parameters. These include people results, customer results, impact on society and key results.

2.3.2 Deming’s System of Profound Knowledge
A system is a network of interdependent components that work together to accomplish the aim of the system. When all connections and interactions are working together to accomplish a shared aim, a business can achieve tremendous results, from improving the quality of its products and services to raise the entire *esprit de corps* of a company. Deming stated that once you improve the system, the problems will go away. Changes need to consider both the consequential and indirect impact on the system.

Knowledge about Variation: There is need to understand the different types of causes of variation; these can be common or specific due to changes in the system.

Knowledge of psychology: People are an important part of the system. In order to pull off effective quality improvement efforts, know how to motivate team members and be able to resolve conflicts among them.

Theory of Knowledge: Plan-Do-Study-Act: Deming stipulates that we must seek to learn from our experiences. Seek to understand the effects of our decisions and changes look for evidence and judge based on that.
2.4 Risk Management in Obstetric Care
Risk is defined as uncertainty that if it occurs will affect achievement of objectives, (Hillson, 2009). This indicates that risk has at least two dimensions; uncertainty and its potential effect on objectives. Fraser et al, (2010) defined risk management in the context of midwifery, as a formal process for identifying, assessing and responding to risk so that the decisions taken about childbirth and its associated care lead to the elimination of undesired outcomes and the promotion of desired outcomes.

2.4.1 Probability-Impact Matrix
Probability is usually used to describe the uncertainty, also known as frequency or likelihood, while impact is often used to describe the effect on objectives. Impact is assessed against each objective usually including time, cost and possibly performance quality, regulatory compliance and so on. A two dimensional assessment is used to plot each risk into a Probability-Impact Matrix with a high/medium/low priority zones. Those
zones are often colored following traffic light convention, with red used for high priority risks to be treated urgently, yellow designated for risks of medium priority to be monitored and green zone containing low priority risks, (Hillson, 2009).

He further stated that other characteristics used to prioritize risks for further attention include; manageability, pronquility, proximity and urgency. The traditional Probability-Impact Matrix does not allow these additional factors to be used in risk prioritization and other techniques are required if they are to be taken into account. These include Bubble Diagram and Risk Prioritization Chart.

### 2.4.2 Risk Response Strategies
Risk involves both opportunities and threats; we need strategies to deal with both types of risk. Seven possible risk response strategies are available with three pairs of proactive options, (with each pair containing one strategy for threats and a corresponding one for opportunities), and a final last resort strategy can be applied to both threats and opportunities. These include the following;

- **Avoid/ Exploit;** avoidance of threat to eliminate risk, by making the threat impossible or irrelevant, exploit an opportunity, make it indefinitely happen.
- **Reduce/Enhance;** reduce the probability or impact or enhance an opportunity to increase them.
- **Transfer/Share;** involve another party in managing the risk.
- **Accept;** for residual risks where proactive action is either not possible or not cost effective.
2.4.3 Risk Response Strategies for MM
SBAs have informally been involved in risk management since the profession began. Fraser et al, (2010), described the following as examples of situations where SBAs have applied principles of risk management:

- Involving clients in decision making: clients are fully informed and their preferences are respected;
- Identifying risks at an early stage: screening tests, a booking history;
- Dealing with risks when they arise: in-service and CPD training, basing practice upon evidence rather than tradition;
- A system of feedback: proper reporting of practice, audit and review of records, staff reflecting upon and sharing experiences in a no-blame environment so as to create a self-reflective organization with memory.

2.5 The Three Delay Model
The reasons for startling MMR are complex and interrelated. In order to design and implement programs that save women’s lives, it is necessary to critically analyze the causes of MM. The leading causes of MDs are hemorrhage, sepsis, hypertensive disorders, unsafe abortions, obstructed labor other direct and in direct causes, (Bowie & Guebbels, 2013; Colbourn et al, 2013). Most obstetric complications cannot be predicted nor prevented but nearly all can be successfully treated. These complications are mediated by a complex set of underlying social, economic and behavioral factors, typically grouped into three delays that describe factors associated with acquiring timely care. (Bowie & Guebbels, 2013).

In low resource countries mothers may have difficulty reaching healthcare facilities, and when they do, the quality of care may not be sufficient to prevent death. The Three Delay Model asserts that MM in developing countries results from three delays to accessing appropriate healthcare are: (a) delay in making a timely decision to seek medical assistance, (b) delay in reaching a health facility, (c) delay in provision of adequate care at a health facility, (Thaddeus and Maine, 1994 as quoted by Ellis et al,
Read, (2013) agrees that the problem is that women do not have access to proper emergency obstetric care, are unable to reach health facility in time and once she reaches the facility, there is limited capacity to deal with the problem. This framework allows for an integrated and critical analysis of the interactions between cultural factors that contribute to the first delay and inadequate EmOC related to the third delay.

Combs-Thorsen et al, (2012), in a retrospective, grounded theory study conducted in Lilongwe to identify the sociocultural and facility based factors that contributed to thirty two MDs in the district, between a period of 1st January to 30th June 2011, agree that various sociocultural and facility factors contribute to the three delays that lead to MDs. The most common delay observed was the delay in prompt quality EmOC upon reaching the health facility due to referral delays, missed diagnosis, lack of blood, lack of drugs or inadequate care and severe mismanagement.

Sustainable efforts to prevent and treat maternal complications are required if Malawi is to attain MDG 5 target. Malawi’s road map to reduce maternal and infant mortality need to improve in both provider systems and community by strengthening health facilities at all levels of care to ensure adequate coverage with functional EmOC, review and implement minimum standards of care for maternal health services with clear mechanisms for monitoring and supervision; review HMIS and orient staff to ensure quality collection and utilization of data for decision making and quality input; and conduct MD reviews and clinical audit. The MMR would decline further if access to both basic and comprehensive EmOC could improve along with skilled attendance for all deliveries, (Leigh, Mwale & Lazaro, 2008 as quoted by Colbourn et al, 2013).

The commitment demonstrated by the government of Malawi to provide quality sexual and reproductive health (SRH) services to its people with the aim of improving the
uptake of maternal and neonatal services and reduce maternal and neonatal deaths are in line with MDG 4 and 5. The sector wide approach of 2004 to 2010 and increase in per capita health funding has enabled increased coordination, investment and provision of essential healthcare in Malawi. The Government of Malawi strives to increase availability, accessibility, utilization and quality of skilled obstetric care during pregnancy, child birth and postnatal period at all levels of the healthcare delivery system. Three impact mitigation measures to help accelerate efforts to reduce maternal and neonatal deaths in Malawi are: community mobilization and training of all leaders on issues of maternal health and safe motherhood as well as family planning to improve education on maternal health; training of 1000 community midwives by 2015 and construction of 130 maternity waiting homes countrywide, for women who live remote from a health facility or is deemed to be high risk in pregnancy to await on set of labor or be scheduled for an elective caesarian section, (Read, 2013). The government has also embarked on training of medical doctors to specialize in Obstetrics and Gynaecology to provide leadership to the rest of healthcare professionals on maternal health issues. The Presidential Initiative on Maternal Health and Safe Motherhood enlisted 12,000 chiefs to take the lead to change attitudes and perceptions of people at grassroots level. Evidence has shown that power lies in the hands of chiefs in Malawi. From 2000 to 2005, 52 MDs were registered in 89 villages of Inkosi Chief Kwataine in Ntcheu. With Chief Kwataine’s involvement in in Safe Motherhood, the community was counseled on hospital delivery, and the involvement of men in promoting maternal health, no MD was registered in the area three years later. TBAs were banned from conducting deliveries because they lack expertise and resources, (Chitenga-Nyoni, Karrot & Phiri, 2011).

Government efforts may be futile if those on the ground do not ensure that the services are available, accessible and of good quality at all times. Chodzaza & Bulltemeier, (2010), conducted an exploratory, descriptive qualitative study in Mwanza District, whose aim was to investigate healthcare workers perception of the quality of, and factors which impact provision of quality EmOC. They used in depth interviews of healthcare workers who were involved in the management of women who experienced
major obstetric complications. The findings showed that poor quality care was due to client related factors; i.e. delays in seeking medical care, reliance on Traditional Birth Attendant, (TBAs) and lack of awareness of signs of obstetric emergencies as well as facility factors i.e. inadequate resources, poor team work and inadequate knowledge and supervision. They therefore concluded that structural and process factors contribute to poor quality EmOC. On the other hand, women are not critical of the care that they receive. Kumbani, Chirwa & Malata, (2012), conducted a descriptive, qualitative study at Thyolo Distirct Hospital, to describe the women’s perceptions on perinatal care. 14 in-depth interviews conducted among women who delivered at the hospital revealed that they had no expectations on the quality of care that they received due to lack of information. The results indicated that two themes extracted from the interviews were good care which was described as respect, confidentiality, privacy as well as normal delivery and unsatisfactory care was described as delays in providing care, inadequate care and unavailability of delivery attendants. The women’s perceptions of care are important because it may determine whether they will deliver at the hospital or not.

Therefore, the findings on perceptions of healthcare workers and those of perinatal women agree. The delays in women’s healthcare seeking behavior may probably be due to the fact that they spend some time at the TBA, and only report to the hospital when there is a complication. Once they reach the hospital, they face further delays probably due to poor team work and inadequate human or material resources.

Combs-Thorsen, Sundby and Malata, (2012), conducted a retrospective, grounded theory case study in Lilongwe. The purpose of the study was to identify the socio-cultural and facility based factors that contributed to MDs in Lilongwe. An in-depth investigation and analysis of the circumstances and events surrounding individual cases of MDs were conducted. The settings of the study were two urban CEmOC facilities of a secondary and tertiary hospital approximately 5km apart in Lilongwe, with the
catchment area of 4 million people. The sample comprised of 32 charts of MDs that occurred at the two hospitals from 1st January 2011 to 31st June, 2011, 34 Healthcare workers and 27 family/community members. Saturation occurred when respondents began repeating similar issues, they or their loved ones faced during the course of their death. Data was collected using chart extraction, facility based interviews and community based interviews. Three different tools were adapted from WHO guidelines ‘beyond the numbers: reviewing maternal deaths and complications to make pregnancy safer’. Data extracted from medical charts were analyzed using Predictive Analytics Software Statistics, (PASW) 18.0. The transcriptions from both the facility staff interview questionnaire and the verbal autopsy and contributing factors questionnaires were analyzed using a directed approach to content analysis. For each MD case, the data from respective medical chart and interview transcriptions were triangulated to gain a more accurate account of what transpired. Based on ICD-10, clinical judgment and experience, two independent Gynecologists/ Obstetricians independently reviewed the triangulated data for each MD and determined the causes of death.

The researchers stated that identifying the causes of the deaths was critical to improving access to quality EmOC. The findings indicated that 16 MDs were due to direct obstetric complications of sepsis and hemorrhage and the other 16 were due to indirect causes, i.e. anaemia, HIV and heart disease. They concluded that the three delays in prompt quality emergency obstetric care that were observed were delays in receiving treatment upon reaching the facility due to referral delays, missed diagnosis, lack of blood, drugs, inadequate care and severe mismanagement. The researchers therefore suggest prioritizing practical solutions for delay three and one and lastly two.

A comprehensive strategy to reduce all three delays at varying degrees developed by Maternal and Newborn Health of the JHPIEGO called the birth preparedness and complication readiness, (BP/CR) matrix. BP/CR addresses these three delays in the continuum of pregnancy, labour, and childbirth, postnatal and newborn care at
individual, community, health facility, service provider and policy maker levels. Healthcare facilities should ensure availability of required equipment and supplies and the support system to enable the provision of quality EmOC. Healthcare personnel should acquire adequate knowledge and skills needed to attend normal child birth and manage obstetric and newborn complications, (Combs-Thorsen, Sundby and Malata, 2012).

The findings from the above three studies show that healthcare facilities that offer maternal services are not well prepared for obstetric emergencies. The studies also identify the need for proper training and supervision of all maternity healthcare service providers, provision of adequate resources, (blood, drugs), for management of obstetric emergencies to ensure timely access of quality emergency obstetric care by all maternity mothers. Effective emergency response is far more important than knowing the signs and symptoms of traumatic injury, it requires a disciplined team in which each participating individual follows clear lines of communication and performs according to clearly assigned role direction, (Gebbie & Qureshik, 2006).

2.6 Conceptual Framework
The following conceptual framework was developed by the researcher to define the key concepts and context of the study, (Blaxter et al, 1996). It helped the researcher to focus and be selective, by defining the territory of the research; to decide the important features and relationships which were likely to be important or meaningful. It also guided the choice of literature that was to be searched and suggested the methods and theories that might be applicable in this study and hence what data to collect and analyze, (Robson, 1993).
Figure 3: Conceptual Framework
2.7 Conclusion
This chapter has demonstrated that MM remains a public health concern. Various efforts through the Safe Motherhood Programs, have been taken by the government and its development partners to address Thaddeus and Maine’s three delays in order to reduce the MMR to acceptable levels. This shows that projects are powerful tools to accomplish the government’s vision, mission and strategy as well as the MDG 5A. Evidence shows that most MDs occur in healthcare facilities due to provision of suboptimal care by SBAs, lack of an enabling environment and poor referral system, (Combs-Thorsen et al, 2014). It is therefore important to investigate the SBA component to come up with factors that affect timely access to quality EmOC in order to design relevant strategies that may impact on MM. This would guide the selection and initiation of further projects to reduce MMR in the country.

The following chapter will discuss the research methods that were used to assess the prevalence of and preparedness for obstetric emergencies at a private clinic in Lilongwe.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
Research is a systematic inquiry that uses disciplined methods to answer questions and solve problems. The ultimate goal of research is to develop, refine and expand a body of knowledge, (Polit and Beck, 2007). Research findings from vigorous studies constitute the best type of evidence for informing professional decisions, actions and interactions with service users.

The researcher considered using the ‘Research process Onion’ developed by (Saunders et al, 2003) because it provides a logical progression through its stages and could be used for an academic or business purpose research (Greener, 2008). Although the Research Onion provides a link between each stage of the research process, it does not adequately indicate how mixed methodology may be used. This creates room for assumptions by different researchers. Therefore, the way the ‘onion’ is designed by moving from the outer layer, so will the subsequent subheadings be outlined in this Chapter; see Figure 3 below of the research Onion by (Saunders et al, 2007).
3.2 Justification of Research Methods Used in the Study

3.2.1 Research Paradigm and Philosophy

A paradigm is a world view, a general perspective on the complexities of the real world. Paradigms for human inquiry are often characterized in terms of the ways in which they respond to basic philosophical questions, these are ontologic, epistemologic, axiologic and methodologic, (Polit and Beck, 2007). With reference to the first outer layer of the ‘Research Onion’, an Interpretivism philosophy under the Epistemological view of knowledge and justification was adopted to explore SBA’s preparedness for obstetric emergencies and see the world through their eyes before adding any thoughts and interpretations (Greener, 2008). Since the study involved finding out the SBA’s views and opinions which are subjective, no one correct answer was assumed in the study to allow the subjective reality of the SBA’s be well understood as the interpretivists believe that, “no one answer is correct”, (Saunders et al, 2007).
3.2.2 Research Approach and Strategy

The second layer of the ‘onion’ depicts the approaches that can be employed when conducting a research. The author used an inductive approach to explore the opinions, views and experiences of SBAs which were collated and analyzed to come up with a new interpretation unlike the deductive approach that deals with mostly statistics (Dawson, 2002). Qualitative data as defined by (Bawden, 1990) “involves studying the behavior of individuals in all the complexity of their real life situations”. It provides a rich detailed picture of why people behave, feel or act the way they do towards a certain situation.

Referring to the third layer of the ‘onion’, the researcher selected Case study as the research strategy for this study because the focus was in-depth with particular focus on a group of SBAs. Creswell, (1994), defined a case study as a descriptive record of an individual’s experiences and/or behaviors kept by an outside observer. He further stated that the researcher explores a single entity, (the case), bounded by time and activity and collects detailed information through a variety of data collection procedures over a sustained period of time. Rowley, (2002), agrees that case studies supports deeper and more detailed investigation of the type that is normally necessary to answer how and why questions.

3.2.3 The study setting

This study was conducted in one of the cities in Malawi. Malawi is a landlocked country south of the Equator in sub-Saharan Africa. The total population of Malawi is 13,077,160, with females comprising of fifty one percent of the total population, (MDHS, 2010). Malawi has experienced a rapid urbanization, from eight percent in 1977 to fifteen percent in 2008 (MDHS, 2010), this has a great impact on social services including the delivery of healthcare services. Healthcare services in Malawi are provided by three main agencies, the government through MOH provides 60 percent, CHAM, provides thirty nine percent and the remaining proportion from the private for profit sector. One percent of all institutional deliveries in Malawi are conducted in private for
profit institutions. Fifty seven percent of this is CS, compared to fourteen percent in government and eleven percent in CHAM.

The case under study is a private for profit institution, established in 2009 to offer high quality SRH services to the Malawian population. It is a CEmOC facility that offers all the nine signal functions as per WHO recommendation, (WHO, 2008). Apart from the administrative and support staff, the clinic has one resident obstetrician and gynecologist, four RNM, and ten NMT as well as four Clinical Officers who work on locum basis, who provide hands on EmOC services at the facility.

3.2.4 Research Method Used
The study was designed in a descriptive, qualitative way. However it combined both qualitative and quantitative methods for primary data collection as indicated in the fourth layer of the ‘Research onion’ because the study will entail an analysis of both statistical and non-statistical data. The first tool for collection of secondary data from Health Management Information Systems, (HMIS) registers on the prevalence of obstetric emergencies had only retrospective, statistical data while the questionnaire for collection of primary data from SBAs was designed with most questions that were subjective and qualitative in nature with only a few questions quantitative in nature. The researcher got in-depth views and opinions from the SBAs through semi structured interviews using the grounded theory approach because the theory will be generated from the data (Saunders, 2009) and will also allow the study be approached with no preconceived ideas. Polit & Beck, (2007), state that integrating different methods of analysis diminishes or overcomes the weaknesses of a single approach. They further argue that it may pose some analytical challenges, epistemological biases and it is costly.

3.2.5 Time factor
Time was one of the limitations or constraints on the part of the researcher. The execution time of the study was cross-sectional as indicated in the fifth layer of the
Research onion’ (Saunders, 2006). However some of the activities were already done before the primary data collection, others were continuously being done but also bearing in mind that, by the time this paper will be read, all the related activities to this study would have been completed. The study had a timeframe to guide the researcher accordingly, (Appendix 1).

3.2.6 Data Collection Techniques
The inner most layer of the ‘onion’ indicates different data collection techniques. The researcher combined two data collection methods. The first one was a formulated guide for the collection of secondary data from HMIS registers, Antenatal and Maternity Registers for a period between 1st February, 2014 and 31st January, 2015. This was to assess the prevalence of obstetric emergencies at the private clinic in Lilongwe, (Appendix II). A formulated semi structured questionnaire (Appendix III) with both open ended questions to guide the interviews and to provide with the participants own explanations (Dawson, 2002) and close ended questions was also used. 10 questionnaires were formulated to obtain views, opinions and experiences of participants who are the hands-on service providers of emergency obstetric care at the private clinic in Lilongwe.

The questionnaires and interviews were conducted in English because it is the official communication language and follow up questions through probing were asked throughout the interview to obtain a deeper understanding. At most, the interviews lasted on an average of 30 minutes and a voice recorder was used to record the proceedings of the interviews. This assisted the researcher to go back to the recorder and listen to the interview again to make sure important information was not left out when writing the report. The researcher’s goal was to at least have fifty percent or more response rate from the interviews so that interpretation of the results could be valid.
3.2.7 Sampling
Sampling refers to the technique or procedure the researcher would adopt in selecting items for the sample, (Kothari, 1990). According to (Saunders et al, 2003), sampling helps to avert restriction of time, money and accessibility of different factors. Saunders et al, (2009) also explains that "sampling techniques provides a range of methods that enables the researcher to reduce the amount of data needed to be collected for a study considering only a sub group rather than all possible related cases". Therefore the sampling choice of this study enabled the research questions being answered and also addressed the research objectives.

Since this research was challenged in terms of time, money, access to information and personnel, sampling was vital. A probabilistic, quota sampling technique was adopted by the researcher because the sample size was small, easier to obtain and more informative, (Kothari, 1990). The researcher identified the population strata, which comprised of nine Nurse Midwife Technicians, four Registered Nurse Midwives, four clinical officers and one gynecologist and obstetrician and determined to involve at least 50 percent of participants from each stratum, Polit and Beck, (2007) stated that by using information about population characteristics, researchers can ensure that diverse segments are represented in the sample, preferably in the proportion in which they occur in the population.

3.2.8 Research Validity and Reliability
All questions were piloted with two SBAs to assess their validity, reliability and value before conducting the main research. Saunders et al, (2009) defined validity as “the extent to which the data accurately measures what they were intended to measure” and reliability as “the extent to which the data collection method will yield consistent findings if replicated by others”. After the pilot, it was found that some questions were asking the same things so the questionnaire was edited to remove the repeated questions. It was however found that the rest of the questions were clear and easily understood and they answered what the researcher was looking for. Generalizing the results of the study
might be difficult because opinions and views are subjective and different; also the sample size studied was small.

3.2.9 Data analysis
Analyzing the data was done simultaneously with data collection in order to incorporate any arising issues. Qualitative data analysis was adopted since the data was more qualitative in nature. Saunders et al, (2009) states that, qualitative data analysis “involves collection of non-standardized data, summarizing it, categorizing it and structuring it using conceptualization to recognize relationships, develop propositions and produce a well-grounded conclusion”. Therefore, thematic analysis and ground theory was used to analyze the data qualitatively. The recorded data was listened to by the researcher and transcribed verbatim to ensure accuracy of transcription. The data was then analyzed manually using thematic analysis, by developing coding categories which helped the researcher to organize the information according to themes (Braun & Clarke, 2006). Data were read several times by the researcher and manual coding was done line by line, grouped and arranged according to similar units. Analysis continued by linking the themes together into broader concepts and also relating it to the relevant literature. The researcher also developed an interview summary form (Dawson, 2002) that helped to dig into the text, look for themes or categories and build upon the text to develop a theory (Greener, 2008) from the detailed picture of why the SBAs act the way they do.

Descriptive analysis using MS Excel were used to analyze the secondary data from HMIS registers.

3.3 Ethical Consideration
At all stages, ethical principles of beneficence, non-maleficence, justice, and respect for human dignity were considered (Saunders, 2003, Polit and Beck, 2007). The Researcher informed authorities at the private maternity clinic about the study and
sought permission to conduct the study with the SBAs in their respective work stations (Appendix IV). The participants were invited to participate in the interviews and to answer the questionnaires at their convenient time to avoid them being destructed from their official duties.

The institution where the case study was conducted would not be mentioned by name anywhere in the report. The researcher respected the autonomy of the participants and their capacity to consent to participate and determine the degree and duration of their participation without any negative consequences. Participants were given an opportunity to ask questions whenever possible and were assured that they may be allowed to know the research findings if they request of them. To indicate their voluntary participation to the study and that their right to privacy and confidentiality was always going to be observed the participants were asked to sign a consent form (Appendix IV).

3.4 Time Frames

As indicated in Appendix I, the research process took seven months, from October 2014 to April 2015.

3.5 Resources and Constraints

3.5.1 Resources
The following resources were required and used to help the researcher carry out the study; ANC and Maternity Admission Registers and SBAs for primary data, relevant books, journals, newspapers and online articles for secondary data, fuel, stationery, pens, pencils, envelopes, laptop, internet, airtime and food.

3.5.2 Constraints
These are some of the challenges that the researcher faced during the execution of the research process:
• Time: the qualitative nature of the study required more time to obtain in-depth information (Saunders, 2009) from the participants and to analyze the data.
• Cost on travel expenses and for resources mentioned above since no one was funding the study.
• Availability of participants to provide data depended on their flexibility and willingness to participate in the study and the fact that they work in shifts.
• The collection of secondary data from HMIS registers posed a threat to the study because some details were missing in the records due to inadequate documentation by the service providers.

3.6 Conclusion
This chapter has clearly highlighted the research design, methodology, approach, strategy and techniques used in the study to collect and analyze all the relevant data. The researcher mainly employed the “Research Onion process” by Saunders et al, (2003). An attempt to justify each choice has also been demonstrated. The chapter has also indicated how ethical issues were handled during the study, the resources used and the research limitations. The next chapter discusses how the data was analyzed and how the findings were interpreted in relation to the literature review guided by the aim and objectives of the study.
4.1 Introduction
This chapter presents findings from the study conducted on the prevalence of and preparedness for obstetric emergencies at a private clinic in Lilongwe. The aim of the study was to assess the prevalence of, and SBAs preparedness for obstetric emergencies. Eight SBAs participated in the study. The results are presented in two parts, the first one is the statistical findings from the secondary data on the prevalence of obstetric emergencies and the other part is that of the semi-structured questionnaire, (Appendix III), on SBAs preparedness for obstetric emergencies. The interview results are presented in themes that emerged from the participants responses. The themes were identified from the study objectives.

4.2 The Prevalence of Obstetric Emergencies
Antenatal and Maternity registers were reviewed using a questionnaire, (Appendix 2) and the following data was collected:

4.2.1 Findings from Review of Antenatal Register
Records from the HMIS ANC registers were collected regarding obstetric complications and risk factors. The following secondary data were collected:

4.2.1.1 Total Number of ANC Visits
There were a total of 1028 ANC visits between 1st February 2014 to 31st January 2015, with the highest of 113 clients in a month and the lowest of 60 per month. The average number of ANC clients per month was 86 as shown in the figure below.
4.2.1.2 Age Range of Antenatal Clients

The table below indicates the age range of clients who attended ANC between 1\textsuperscript{st} February 2014 and 31\textsuperscript{st} January 2015 at the private maternity clinic in Lilongwe.

<table>
<thead>
<tr>
<th>Age range of ANC clients (in years)</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 to 19</td>
<td>38</td>
<td>3.7</td>
</tr>
<tr>
<td>20 to 24</td>
<td>95</td>
<td>9.2</td>
</tr>
<tr>
<td>25 to 35</td>
<td>771</td>
<td>75</td>
</tr>
<tr>
<td>36 to 45</td>
<td>77</td>
<td>7.5</td>
</tr>
<tr>
<td>46 to 55</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Invalid</td>
<td>47</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,028</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 2: Age range of ANC clients
4.2.2.3 Gravidity of ANC Clients
The chart below presents the gravidity of mothers who attended ANC between 1\textsuperscript{st} February 2014 to 31\textsuperscript{st} January, 2015.

![Antenatal Visits_gravity](image)

Figure 6: Gravidity of ANC Clients

4.2.1.4 Parity of ANC Clients
The pie chart below presents the parity of clients who attended ANC between 1\textsuperscript{st} February, 2014 and 31\textsuperscript{st} January, 2015.
4.2.1.5 Obstetric Risk Factors Identified during ANC

The figure below presents obstetric risk factors identified during ANC. 63% of mothers had no risk factors identified during antenatal visit.
4.2.2 Review of Maternity Admission Register
The following are findings from the HMIS maternity registers on obstetric emergencies that occurred during the period of the study:

4.2.2.1 Maternity Admissions
A total of 556 maternity mothers were admitted to the clinic between 1st February, 2014 to 31st January, 2015 with a highest of 55 in a month and the lowest of 41 in a month, and a mean of 46 in month as presented in the graph below.
4.2.2.2 Age range of Maternity Admissions

The table below presents the age range of maternity clients who were admitted to the private maternity clinic between 1\textsuperscript{st} February, 2014 and 31\textsuperscript{st} January, 2015.

<table>
<thead>
<tr>
<th>Age range of ANC clients (in years)</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 to 19</td>
<td>10</td>
<td>1.8</td>
</tr>
<tr>
<td>20 to 24</td>
<td>39</td>
<td>7</td>
</tr>
<tr>
<td>25 to 35</td>
<td>390</td>
<td>70.1</td>
</tr>
<tr>
<td>36 to 45</td>
<td>87</td>
<td>15.6</td>
</tr>
<tr>
<td>46 to 55</td>
<td>14</td>
<td>2.5</td>
</tr>
<tr>
<td>Invalid</td>
<td>16</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>556</strong></td>
<td><strong>99.9</strong></td>
</tr>
</tbody>
</table>

Table 3: Age range of maternity admissions

4.2.2.3 Gravidity of Maternity Admissions

The figure below indicates the gravidity of mothers admitted to the private maternity clinic during the period of the study.
4.2.2.4 Parity of Maternity Admissions
The figure below presents the parity of mothers who were admitted to the private maternity clinic between 1\textsuperscript{st} February, 2014 and 31\textsuperscript{st} January, 2015.

Figure 11: Parity of Admitted Maternity Mothers
4.2.2.5 Gestation on Admission
The table below indicates the gestation of mothers who were admitted to the private maternity clinic between 1\textsuperscript{st} February, 2014 and 31\textsuperscript{st} January, 2015.

<table>
<thead>
<tr>
<th>Gestation at time of admission</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Trimester</td>
<td>33</td>
<td>5.9</td>
</tr>
<tr>
<td>Second Trimester</td>
<td>114</td>
<td>20.5</td>
</tr>
<tr>
<td>Third Trimester</td>
<td>76</td>
<td>13.7</td>
</tr>
<tr>
<td>Term Fundus</td>
<td>255</td>
<td>45.9</td>
</tr>
<tr>
<td>Unknown</td>
<td>78</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>556</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4: Gestation of mothers at time of admission

4.2.2.6 Diagnosis on Admission
The figure below indicates the diagnosis of mothers admitted to the private maternity clinic within a period of 1\textsuperscript{st} February, 2014 and 31\textsuperscript{st} January, 2015. It shows that most of the mothers were admitted due to labor pains, (46.6 percent), while 18.5 percent of the admissions were due to other medical conditions in pregnancy and 15.8 percent were due to hemorrhage and 11.5 percent due to retained products of conception.
4.2.2.7 Obstetric Complications

58.6 percent, (326) of the mothers admitted to the private maternity clinic in Lilongwe did not experience any pregnancy related complication. There were a total of 231 obstetric complications during the period of 1st February, 2014 to 31st January, 2015. 41.6 percent of the complications were obstructed/ prolonged labour while 38.1 percent was hemorrhage and ten percent was preeclampsia/ eclampsia as shown in the figure below.
Figure 13: Obstetric complications

4.2.2.8 Diagnosis on Discharge
The table below presents the diagnosis on discharge for mothers that were admitted to the private maternity clinic within a period of 1st February, 2014 to 31st January, 2015.

<table>
<thead>
<tr>
<th>Diagnosis on discharge</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVD</td>
<td>101</td>
<td>18.2</td>
</tr>
<tr>
<td>Vacuum delivery</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>Breech delivery</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>178</td>
<td>32</td>
</tr>
<tr>
<td>Evacuation of the uterus</td>
<td>106</td>
<td>19.1</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>6</td>
<td>1.1</td>
</tr>
<tr>
<td>Other</td>
<td>162</td>
<td>29.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>556</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
4.2.2.9 Mode of Delivery
283 deliveries were conducted during the period of the study. 179, (63.2 percent) of the deliveries were through CS, 101, (35.7 percent) were normal deliveries while 3, (1.1 percent) were vacuum deliveries as shown in figure 14 below.

Figure 14: Mode of Delivery

4.2.2.10 Condition of Mother on Discharge
One out of the 556 mothers was a MD, while the rest of the mothers were discharged well.
4.3 SBAs Preparedness for Obstetric Emergencies

The following section presents findings from the semi structured interviews that were conducted with SBAs at the private clinic in Lilongwe:

4.3.1 Demographic Data

4.3.1.1 Qualification of participants

The study participants comprised of eight SBAs, three, (37.5 percent) of who were NMTs, two, (25 percent) RNMs, two, (25 percent) Clinicians and One, (12.5 percent) Medical Doctor.

4.3.1.2 Years of experience in a maternity unit

Two of the participants had more than ten years of working experience in a maternity unit; four had seven to ten years’ experience while the other two had four to six years of experience and the other two 0 to 3 years as presented in the table below.

<table>
<thead>
<tr>
<th>Years of experience in a maternity unit</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>4 to 6</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>7 to 10</td>
<td>3</td>
<td>37.5</td>
</tr>
<tr>
<td>10 and above</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6: Years of experience in a maternity unit for participants

4.3.1.3 In-service training attended

Five members stated that they have had a formal in service training on management of obstetric emergencies while three haven’t. Three of those that had in-service training
attended in the past two to five years while the other two attended the training more than five years ago.

4.3.2 Experience in managing obstetric emergencies
All participants have had some kinds of obstetric emergency while on duty, the emergencies involved the following; hemorrhage, precipitate labour, obstructed labour, hypertensive disorders in pregnancy, (pre-eclampsia and eclampsia), sepsis, ruptured uterus and other emergencies like antepartum maternal collapse, shoulder dystocia, uterine eversion and cord prolapse.

4.3.3 Competency in managing obstetric emergencies
The table below indicates participants’ competencies in management of various obstetric procedures:

<table>
<thead>
<tr>
<th>No.</th>
<th>Description of Obstetric Procedure</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal delivery</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Vacuum delivery</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Breech delivery</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Shoulder dystocia</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Manual removal of placenta</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Active management of third stage of labour</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Management of antepartum hemorrhage, (APH)</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Active management of Post-Partum Hemorrhage, (PPH)</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Blood transfusion</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Use of Partograph</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>Management of hypertensive disorders in pregnancy</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>Caesarean section</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>Evacuation of the uterus</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>Caesarean hysterectomy</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 7: Participants competencies in management of various obstetric procedures
4.4 Thematic Analysis
Three themes were identified which include; challenges faced during management of obstetric emergencies, measures taken to prepare for obstetric emergencies and structures that facilitate timely provision of obstetric emergencies.

4.4.1 Challenges faced during management of obstetric emergencies
The following subthemes emerged on challenges faced by SBAs during management of obstetric emergencies;

4.4.1.1 Staffing
Most of the participants stated that sometimes it takes about half an hour or so to perform an emergency procedure because the clinic does not have a resident anesthetist hence they use regular part time anaesthetists for locum who travel from a distance of about 12km to assist. Sometimes the anesthetist might be busy at his work place hence they wait for him to finish whatever work he is doing before he shows up for the emergency.

4.4.1.2 Support System
4.4.1.2.1 Referral Services
62.5 percent of the participants stated that sometimes it is difficult to find an ambulance when you have an urgent patient for referral especially when the ambulance service provider that they normally engage is not available.

I remember the other day when we had a patient to refer to KCH ICU (Kamuzu Central Hospital, Intensive Care Unit). We were told that Masm ambulance was in Blantyre,.......... so we had to find another ambulance. It took us about thirty minutes or so to identify another ambulance and the ambulance came within fifteen minutes after we communicated with them....

4.4.1.2.2 Sourcing of blood and its products
Seventy five percent participants described that sourcing of blood and its products as one of the challenges they face during management of obstetric emergencies. They stated that much as their clinic is registered with MBTS to collect blood and its products
whenever there is need, MBTS is not able to meet their demands. They get fewer units than what they order most of the times.

One day, we had a mother with APH, she had bled out and needed three units of whole blood and six units of ffps, (fresh frozen plasma). We only managed to get two units of whole blood and two units of ffps. This affects our efficiency in provision of quality care to our patients.

4.4.2 Measures to Prepare for Obstetric Emergencies

4.4.2.1 Equipment
Seventy five percent of the participants described checking their emergency equipment at the beginning of each shift as one of the measures taken to prepare for obstetric emergencies at the private maternity clinic.

At the beginning of each shift, whether day or night, we check all our equipment, the suction machine, oxygen concentrator, resuscitaire, incubator and the gen set and we document in the book that we have checked them to ensure that we are ready for any kind of emergency that may come in the course of the shift.

I always make sure that I have allocated someone on duty to check the emergency trolleys and I make sure that this is done by regularly checking in the book where we record our daily emergency stocks.

4.4.2.2 Drugs and Stocks
All the participants stated that they check and restock the emergency trolleys in theatre, labour ward and in the nurses’ office as one of the crucial measures they take to prepare for obstetric emergencies. They also explained that they make sure they have enough theatre sets e.g. drapes, gowns and surgical sets for theatre instruments and gauze sterilized and packed in the right place so that they do not waste time when there is an emergency that needs an urgent surgical intervention like emergency caesarean section or evacuation of retained products of conception. A few participants also stated
that they make sure that they procure drugs and all other pharmaceutical stocks when they reach their prescribed minimum stock levels to ensure continuity.

*When I come on duty, at the beginning of a shift, I check the emergency trolleys in the nurses’ office, labour ward and in theatre to make sure that we have enough stocks of drugs like atropine, adrenaline, cytotec and oxytocin, Magnesium Sulphate, ceftriaxone and other drugs as well as IV fluids like Ringers Lactate. I check the quantities, if less than what is supposed to be in the trolley I restock. I also check the expiry dates for these drugs. I also check if there are enough surgical sundries like giving sets, cannulas and syringes. So that we have all that we need in case of an emergency. You don’t waste time looking for stocks when you have a bleeding or an eclamptic patient, (Participant number 2).*

### 4.4.2.3 Staffing

#### 4.4.2.3.1 Orientation of new members of staff

Participants stated that all new members of staff are well oriented on the protocols for the management of obstetric emergencies. They are also oriented on the management of emergency trolleys so that they know what is where to avoid wasting time to look for stocks when they have an emergency. New members of staff are also oriented to skills like scrubbing in theatre so that they can readily do so if there is need for an emergency procedure when on duty other than calling someone from home to come and assist because the nurse on duty does not have such skills.

*When a new nurse is recruited, she is given an orientation on protocols for management of obstetric emergencies; she is also shown where those protocols are posted for reference in case she is not sure. New (members of) staffs are also given the responsibility of checking and restocking the emergency trolley to ensure that they know what is put where so that when they have an emergency when on duty they know where to find what…. Most of the time, some nurses are not familiar with scrubbing in theatre, hence everyone is taught on how to scrub or receive a baby in theatre so that we don’t*
wait for someone from home when there is an emergency because this may compromise (patient) care.

4.4.2.3.2 Team work
Team work is also encouraged at all times with members from other departments, the participants said. Administration staffs are also advised to quickly inform the nurses as soon as they get a patient that needs urgent attention. There is also a good collaboration with the laboratory staff, if a doctor request for urgent laboratory test, they do they quickly to ensure efficiency.

4.4.2.3.3 Regular CPD meetings
Most of the participants also explained that they conduct regular CPD meetings on areas which they need more knowledge and skills on. Most of the participants also described the morning hand over meetings as one of the opportunities where they discuss cases and evaluate management of various patients thereby sharing knowledge and learn new skills.

We conduct CPD meetings at least fortnightly and discuss and evaluate how certain patients were managed. This enables us to learn from each other and share some knowledge and skills and it helps us to improve our performance. Topics are identified by the CPD coordinator depending on areas of need. Case presentations are also done during CPD meetings.

4.4.2.3.4 Enough staff per shift
Participants also described ensuring that there are enough members of staff per shift as one of the measures to prepare for obstetric emergencies. They further explained that they get some staff to do locum and others work over time to make sure all shifts are well covered regardless of whether it is a day or night shift.
We always make sure there are at least three nurses on day shift and two on night for instance. So if we are short staffed, that we cannot have the minimum numbers of staff per shift, we have some regular nurses who work as locum nurses. These help to cover for the shortages so that we can maintain our quality standards because one person cannot do a job that is supposed to be done by three people, and then you compromise a lot.

4.4.2.4 Communication with Clients
Some participants described that every patient is given a card on first visit, which has the clinic contact numbers and e mail address so that they can call anytime they have an emergency before they come so that they are advised on what to do before they reach the clinic. This also helps members of staff to prepare for emergencies before they arrive at the clinic. Patients and clients are also advised to call the doctor directly if they have any emergency. This also enables efficient management of obstetric emergencies.

Patients are given contacts for the clinic for them to call in case of emergencies. We therefore prepare well in advance. We prepare a bed before a patient comes, prepare theatre with all necessary sets and call the anesthetist before patient comes to avoid wasting time with other things…

4.4.2.5 Patient education
Patients and clients are individually educated on their condition and possible risk factors or danger signs that they need to watch for and report as soon as possible, explained some participants. They stated that it is easier for their clients and patients to understand the information that they are given because most of them are well educated hence they are able to take prompt action in case they have an emergency.
I explain the whole disease process or physiology to my patients so that they understand what is going on. I also tell them to promptly report any danger signs. Most of them comply with what I tell them to do because they are well informed, explained one of the participants.

4.4.3 Structures that Facilitate Prompt Management of Obstetric Emergencies

4.4.3.1 Equipment

Most of the participants described that the clinic has got equipment that they need to manage obstetric emergencies promptly. These include resuscitation equipment like defibrillator, suction machine, oxygen concentrator, ambubags, nebulizer and back up equipment like the generator and oxygen cylinders. This equipment is regularly serviced to ensure their optimal functioning. All members of staff are well trained on how to use and take care of them. All equipment that needs to be charged on power is charged to make sure the battery is full at all times so that they may be used when there’s power outage. They further stated that knowing that this is a maternity service provider; they have a well-equipped labour ward and admission beds, and a well-equipped theatre to manage obstetric emergencies promptly to avoid delays due to referral.

We work with peace of mind here because we have all the necessary equipment that we need for the management of any obstetric emergencies… I may not remember everything but we have a theatre with all we need to perform all obstetric surgeries, a gen set that we use when power goes out while a patient is on any of our emergency machines, we have oxygen concentrators, defibrillator, oxygen cylinders, suction machines just to mention a few. But we do not improvise anything at any time because we always make sure that all our machines are fully functional at the beginning of each shift, all faults are rectified on time. The gen set and water tank also save us a lot because sometimes ESCOM power is out and you have a patient on O2, or you may have patients in the ward and there’s no running water, or sometimes you cannot perform any procedures in theatre if there is no water. With the tank we don’t even know when there is a water shortage in the area.
4.4.3.2 Drugs and Surgical Sundries
Participants explained that it is the clinic policy to order all drugs and pharmaceuticals as well as cleaning and housekeeping materials as soon as they reach the minimum stock levels to ensure continuity of care.

*It is our policy and norm to order all stocks as soon as they reach minimum prescribed levels so that we do not compromise on the quality of care for our patients. This also applies even for the stores items that we use for cleaning and housekeeping.*

The emergency trolley was also described as one of the structures that are in place that enables HCWs at the clinic to offer timely quality EmOC services. Most of the participants stated that they check, restock and document in a book provided at the beginning of each shift. This helps them to have all that they need once they have an obstetric emergency.

*When there’s an emergency, I just push the trolley to where I need it and I have everything that I need to manage the patient …. These include everything you need for commencing an Iv drip with all the fluids in there, all emergency drugs like atropine, Adrenaline, MGSO4, Hydralazine, Frusemide just to mention a few. It also contains everything you need to collect a blood or urine specimen. It really saves us a lot of time and it shows that you are well organized.*

4.4.3.3 Staffing

4.4.3.3.1 In-service Training
Participants described regular in-service training as one of the structures that enable them prepare for obstetric emergencies. Some also stated that hand over meetings conducted at the end and beginning of every shift as one ways of acquiring knowledge and skills on how best to manage obstetric emergencies.

*CPD meetings as well as hand over meetings help us learn real practical issues on management of various cases. It also gives us an opportunity to evaluate the care that we give to our patients so that we can improve. I had a patient with PPH the other day, I*
panicked to manage her. After I was asked to present her as my case, I learnt how best I can manage PPH and how to use cytotec effectively.

Members also described the learning resources that are readily available at the institution that facilitate their preparedness for obstetric emergencies. They mentioned the availability of study materials like books and the internet which they always use to source for any updated information on management of various types of obstetric emergencies. 

*Much as we have books for midwifery and obstetrics available, I find the internet more convenient because we access up to date reliable information. The internet is available to anyone at all times.*

4.4.3.4 Support System
Participants mentioned that the clinic has a good relationship with other service providers like MBTS where they get blood and other blood products; Masm ambulance that is used to refer patients to other institutions and the suppliers that enable them to have quality supplies continuously.

We have a good working relationship with our service providers. These include MBTS, the ambulance providers as well as the suppliers such that they sometimes go an extra mile to provide us with what we need.

4.5 Summary of findings
This chapter has presented the results on the prevalence of and SBAs preparedness for obstetric emergencies at private maternity clinic in Lilongwe. The results have been presented in two main sections, prevalence of obstetric emergencies that is descriptive statistics and the SBAs preparedness for obstetric emergencies, presented as demographic data and thematic analysis. The next chapter will derive some discussion based on the research questions presented in chapter one of this paper.
4.6 DISCUSSION OF FINDINGS

4.6.1 Introduction
The following chapter presents a discussion of the findings on the study which aimed at assessing the prevalence of and SBAs preparedness for obstetric emergencies at a private maternity clinic in Lilongwe. The discussion will focus on the findings of the retrospective review of antenatal and maternity registers and the themes derived from the one on one interviews with SBAs on how they prepare for obstetric emergencies when on duty. The strengths, limitations, conclusion and recommendations will also be presented in this chapter.

4.6.2 The Prevalence of Obstetric Emergencies
Data on antenatal visits was collected because antenatal visits can provide opportunities for detecting risk factors for any underlying illnesses, (Yego et al, 2014). WHO, (2005) recommends that pregnant women should receive focused ANC in which birth preparedness and complication readiness is a key component. Mutiso et al, (2008), agreed that one of the key roles of ANC is to provide health education on danger signs of pregnancy and delivery, preparation of a birth plan and to encourage delivery under a SBA.

Birth preparedness and complication readiness (BP/CR) is a safe motherhood strategy whose objective is to promote the timely use of skilled maternal and neonatal care during childbirth or obstetric emergencies by reducing delays at all levels, (JHPIEGO). It entails making plans prior to birth to ensure that a pregnant woman is prepared for normal birth and complications. Decisions are made and documented on such issues as desired place of birth, the preferred SBA, items required for birth, birth companion, getting a compatible blood donor and arranging in advance for transport. Mutiso et al, (2008), further described other elements of birth preparedness as knowledge of expected date of delivery (EDD), signs of labour, HTC, Sexually Transmitted Infections,
(STI) and Anemia screening, mobilizing resources to pay for the services, the importance of postnatal care, exclusive breastfeeding and contraception.

Approximately, fifteen percent of pregnant women develop life threatening complications hence need for EmOC. These complications are unpredictable and may progress rapidly to a fatal outcome, (WHO, 2013). Knowledge of danger signs of obstetric emergencies and appreciation of the need for rapid and appropriate response when emergencies occur may reduce delay in decision making and in reaching health facilities. Danger signs in pregnancy are; vaginal bleeding, severe headache, severe vomiting, swelling of hands and face, difficulty in breathing, fits or convulsions, fever, reduced or absent fetal movements and draining liquor, (Fraser et al, 2010).

4.6.3 Antenatal Risk Factors Identified

4.6.3.1 Teenage Pregnancy
In Malawi, five out of ten girls marry before the age of eighteen, (Human Rights Watch, 2013). This study revealed that 3.7 percent of the antenatal mothers, and 1.8 percent of the maternity admissions were between the age of fourteen and nineteen. A Human Rights Watch Report, (2013), found that, between 2010 and 2013, 44,000 girls attending primary school in Malawi dropped out due to marriage or pregnancy. MDHS, (2010) indicated that twenty six percent of teenagers within fifteen to nineteen years have begun childbearing; twenty seven percent in rural and twenty six percent in urban areas. The report further stated that childbearing in teenage girls decrease with increasing level of education, forty five percent with those with no education and four percent with those with secondary education. This is consistent with the findings of this study because the study was conducted in an urban setting and at a private clinic where most of the service users live above the poverty levels as evidenced by attending a paying private clinic other than a public hospital where SRH services are free.

Teenage pregnancies have adverse short and long term health outcomes for both the young women and their infants. Teenage mothers have been found to be at increased
risk for anemia, urinary tract infection, and pregnancy-induced hypertension (Christofides, 2014). Infants are more likely to suffer infant and neonatal death, accidents, infections, and sudden infant death syndrome (SIDS) (Chen et al, 2011). There is also a body of literature that has explored the longer term social and mental health consequences of teenage pregnancy. These consequences include depression and substance use, increased sexual risk behavior, as well as lower educational attainment and socioeconomic status (Christofides et al, 2014).

In a longitudinal study aimed to describe the range of risk and protective factors for incident unwanted and unplanned pregnancies occurring among a cohort of 819 teenage women aged 15 to 18 over approximately two years of follow-up, the study also aimed to describe the relationship between gender inequality and gender-based violence and subsequent incident pregnancies among a cohort of teenage girls in the Eastern Cape, South Africa. Although not all of the measures of gender inequity were associated with unplanned and unwanted pregnancies in the study, there was evidence that inequitable gender power relations and low socioeconomic status do increase risk. Interventions to prevent teenage pregnancies need to be tailored by socioeconomic status because some teenagers may see having a pregnancy as a way to have a more secure future. Interventions that engage with teenagers’ relationship dynamics are essential for effective prevention of unwanted and unplanned pregnancies.

Harmful traditions persist in rural Malawi that can expose girls to unwanted pregnancy and HIV infection. Leveraging growing momentum to end early and forced marriage in Malawi, Human Rights Watch is calling upon the government to set a minimum legal age for marriage.
4.6.3.2 Grand multiparity
Because every pregnancy carries a risk, a lower fertility would result in less overall risk of maternal mortality. The study findings showed that 2.6 percent of mothers who attended ANC and 5.8 percent of the maternity admissions at the private maternity clinic in Lilongwe were grand multiparas. The ideal family size as reported in the 2010 MDHS was 4 for women, which is more than one child less than the actual fertility rate of 5.7 children. The wanted fertility was highest in uneducated women (4.9) and lowest in those with more than secondary education (2.8). The difference between wanted and actual number of children was lower in urban (0.7) than in rural areas (1.3). The current total fertility rate (TFR) of 5.7 constitutes a decline of twenty five percent over the last twenty three years. The decline in fertility was more pronounced in urban (18 percent) than in rural areas (three percent). This was probably the case because 94.8 percent of all antenatal mothers were from urban areas, they are probably educated hence they have access to health related educational materials and have access to modern SRH services.

4.6.3.3 Hypertensive Disorders in Pregnancy
Hypertension is defined as a BP (Blood Pressure) of 140/90mmHg on two occasions at least two to four hours apart, (Fraser et al, and 2010:374). It is important to recognize the distinction between a woman whose hypertension antedates pregnancy and one who develops increased BP during pregnancy. As the hypertensive disorders are unlikely to be prevented, early detection and referral by the midwife is crucial so that monitoring and treatment can be implemented to minimize the severity of the condition. The midwife is in a unique position to identify those women who are more likely to develop preeclampsia; a comprehensive history taking at their initial visit will identify the following risk factors; nulliparity, previous history of preeclampsia, raised BP at booking, raised BMI, maternal age of more than 40 years, an interval of more than 10 years since a previous pregnancy, and the presence of underlying medical disorders e.g. pre-existing hypertension, renal disease, diabetes, antiphospholipid syndrome and autoimmune disease such as lupus, (Fraser et al, 2010).
On subsequent visits the midwife must take note of any further pregnancy associated risk factors such as multiple pregnancy. In this study, the two essential elements of preeclampsia, hypertension and proteinuria, were assessed for at regular intervals throughout pregnancy and recorded in the register. The study showed that at least 10 mothers had preeclampsia every month during the period of the study and diagnosis was based on the rise in BP and presence of proteinuria after 20 weeks gestation. However, the researcher did not indicate the common risk factors identified in these women, which might have predisposed them to the preeclampsia.

4.6.3.4 HIV Status
HTC is important during pregnancy because it enables women know their HIV status. Women who test negative are given information and support to remain uninfected. A Reactive HIV test allows the woman to receive additional care to keep her health, prevent transmission to her baby and partner and help her make decisions about the future. In this study, 6.8% of the antenatal mothers tested HIV Reactive. MDHS, (2010) reported an HIV prevalence of 9% for ANC mothers using services outside the public sector.

Fraser et al, (2010), stipulates that HIV positive women may benefit from more frequent antenatal visits, maternal weight should be monitored and nutritional supplements advised where necessary, maintenance of hemoglobin levels. PMTCT measures are also emphasized in these mothers during the antenatal, prenatal as well as postnatal period to prevent vertical transmission to the baby.

Although HIV reduces the rate of conception resulting in fewer pregnancies, it is likely to increase MM due to a combination of; increases in direct obstetric deaths, (due to increases in puerperal sepsis; increases in in indirect obstetric deaths, (due to complications of HIV aggravated by pregnancy); and decreases in the quality of care
available to all mothers as a result of less trained health workers being available at health facilities, (as many may die from AIDS) and a more prejudicial attitude of HCWs towards those who they suspect of having HIV, (Graham, 2003).

A review of forty three MDs in hospitals in central region in Malawi in 2007 showed that sixteen percent were due to sepsis and attributed further sixteen percent to AIDS, (Kongnyuy et al, 2009). Vink and De Jonge, (2013), in a study of 61 MDs in a central region hospital during 2007 to 2011 found (twelve), twenty percent was HIV reactive, ten of whom died of non-pregnancy related infections including meningitis and pneumonia. In yet another study of thirty two MDs in a tertiary hospital in Malawi in 2011, Combs Thorsen et al, (2012), found that thirteen, (forty percent) of the women were HIV reactive, nine HIV non-reactive and 10 had an unknown HIV status and classified six, (nineteen percent) of the MDs as due to sepsis and a further three, (nine percent) due to HIV-related disease. HIV infections may also predispose pregnant women to more severe malaria morbidity, (Nkhoma et al, 2012), but data related to trends in malaria related maternal complications are limited.

### 4.6.3.5 Anemia in Pregnancy

Thirty out of 1028, (2.9 percent) antenatal mothers had anemia in pregnancy. Anemia in pregnancy may be as a result of malaria or other infections such as hookworm or HIV or nutritional deficiencies, (Munasinghe and van den Broek, 2013). Facility based studies in Malawi have estimated anemia to cause seven percent of forty three MDs, (Kongnyuy et al, 2009), 12 percent of 165 MDs, (Coulbourn et al, 2013), sixteen percent of thirty two MDs, (Combs Thorsen et al, 2012) and seventeen percent of sixty one MDs, (Vink and de Jonge, 2013).

### 4.6.3.6 Primiparity

24.7 percent of the antenatal mothers were primigravidas. Primigravidas are at a higher risk of first and second stage of labour, increased chances of fetal distress during labour and need for intensive monitoring as compared to the multigravidas, (Hashim et al,
In a study conducted to ascertain if primiparity is an intrapartum obstetric risk factor for maternal and perinatal outcome, Hashim et al, (2012), stipulated that primiparity is associated with intrapartum risks; primiparous women had the longest and most gradual labour curve when compared with multiparous women. There is also evidence of a high frequency of second stage intervention in the form of instrumental vaginal delivery and caesarean section due to lack of experience of previous labour, (Baloch et al, 2008). Kramer et al, (2011), stated that nulliparity is a risk factor for primary PPH. A prolonged active, but not passive second stage of labour is associated with the risk of PPH. In view of the above, delivery of primigravida outside hospital premises should be discouraged and women should be counseled for supervised ANC and delivery, (Hashim et al).

4.6.3.7 Previous Caesarean Section
WHO, (2013), advises a maximum of fifteen percent CS per country. Recently, evidence has shown an increase in CS rates far beyond the recommended rates. WHO, (2010), reported that nearly half of births in China was delivered by CS, the world’s highest rate, and a quarter of these were not medically necessary. About a third of mothers in the US give birth by CS. There are definite indications for a CS, which can be life saving for both mother and child. The high rates are a concern because CS has become an elective procedure based on convenience instead of medical necessity.

However, it is well known that having a CS puts women at risk for the next pregnancy. Safety of child birth after CS is a public health concern because the risk of uterine rupture is higher. The EmONC Report, (2010) stated that uterine rupture accounted for 7.9 percent of MM, however, this was not necessarily secondary to previous CS.

This study showed that 11.7 percent of all ANC mothers had previous CS deliveries. These women were at risk of a number of obstetric complications hence they needed to be counseled adequately on the risks and danger signs that they should look out for and what to do once the signs appear. Lack of information on the warning signs during pregnancy, labour and postpartum hampers women’s ability to partake fully in safe
motherhood initiatives. In a descriptive cross-sectional study conducted in nineteen Sub Saharan countries, the percentage of women recalling information about potential complications of pregnancy during ANC varied widely, ranging from six percent in Rwanda to seventy two percent in Malawi. In fifteen of the nineteen countries, less than fifty percent of women reported receiving the information. They therefore recommended the need for SBAs to fully use educational opportunities in ANC.

4.6.4 Maternity Admission and Discharge Diagnoses
The results indicated that 46.6 percent of the women admitted to the private maternity clinic during the period of 1st February, 2014 to 31st January, 2015 were in labour. 63.2 percent of those gave birth through caesarean section (CS) while 35.7 percent had normal deliveries and one percent vacuum deliveries.

This indicates a high rate of CSs, (WHO, 2007). These findings are consistent with EMONC Report, (2013), which recorded a CS rate of fifty percent in private facilities in Malawi compared to the government (fourteen percent) and CHAM, (eleven percent) facilities. This would probably be due to the high rate of primigravidas that are seen at the clinic. These tend to have multiple risk factors and complications secondary to prolonged labour. With good monitoring at a private clinic, problems ought to be picked earlier and action may be taken earlier without any delays. However, it might also be the fact that private practices tend to take action earlier than needed for fear of litigation. Smith, (2014) also reported that more than two in three South African mothers in private hospitals give birth through caesarean section. Snyman, (2014) as quoted by Smith, (2014) stated that in some wealthy areas, 80 percent of mothers choose to have a caesarean section and in some hospitals in Cape Town, the rate exceeds 90 percent despite the cost being higher than the fee for a natural birth. CS has become elective procedures, based on convenience instead of medical necessity.

A 2010 WHO report claimed the procedure has reached ‘epidemic proportions’ in many countries. Nearly half of births in China were delivered by CS. The WHO examined national CS rates and maternal and perinatal mortality rates from various countries and
concluded that there is no additional health benefits associated with a CS rate above ten to fifteen percent, (WHO, 2007). However, it would be necessary if the study also showed the indications of the caesarean sections in order to justify the high rate of caesarean deliveries at the clinic.

4.6.5 Obstetric Complications
Studies carried out in both developed and developing countries have identified several risk factors for perinatal deaths. Perinatal deaths are largely a result of poor maternal health, adverse social conditions, and inadequate care during pregnancy, delivery and the immediate postpartum period. Ensuring that all deliveries are supervised by a SBA has become a cornerstone of safe motherhood.

The Partograph is a pre-printed paper form on which labour observations are recorded, (Lavender, Hart and Smyth, 2013). The aim of a partograph is to provide a pictorial overview of labour, to alert midwives and obstetricians to deviations in maternal and fetal wellbeing and labour progress. The most prevalent obstetric complications that were identified in this study are; hemorrhage, obstructed/prolonged labour and pre/eclampsia, (Figure 13)

4.6.5.1 Hemorrhage
The findings in this study show that 38.1 percent of maternity complications were hemorrhage, (Figure 13). Patients with hemorrhage should be treated as emergencies in health facilities. Both types, ante partum hemorrhage (APH) and postpartum hemorrhage (PPH), require urgent intervention because the estimated average time to death is short (i.e. 12 hours for APH and 2 hours for PPH), (Bowie & Guebbels, 2013). (Ratsma, 2001), agrees that obstetric hemorrhage causes 26.7% of MDs within 24 hours of admission. The patient needs to be resuscitated and the bleeding stopped, if necessary operatively. Lack of blood is often an important contributing factor to deaths from hemorrhage, especially in small or anemic women, who tolerate blood loss less well.
APH is defined as bleeding from the genital tract after 28 weeks gestation and before the birth of the baby. Causes include placenta praevia (when the placenta covers all or part of the cervical opening), abruptio placentae (when the placenta loosens from the uterus wall before the baby is born) and ruptured uterus.

The most common site of bleeding in PPH is the placental bed, because the uterus does not contract well. This can happen because of too rapid separation of the placenta (e.g. by pulling on the umbilical cord), a retained placenta (a placenta or placental part that is not delivered within two hours after delivery of the infant), high parity, prolonged labour, twin delivery, polyhydramnios, anaesthesia or even a full bladder. PPH might also originate from lacerations that developed during childbirth, e.g. vulval or vaginal tears, from breakdown of the uterine wound after caesarean section or ruptured uterus or from sloughing of dead tissue following obstructed labour.

PPH globally occurs in 10.5 percent of live births, (WHO, 2003). Defined as vaginal bleeding in excess of 500ml after child birth, PPH is the leading cause of MM worldwide, (twenty five percent) and a major contributor of MD in Africa (33.9 percent), (WHO, 2005). Factors associated with PPH include increased maternal age, primiparity, fetal macrosomia, multiple pregnancy, fibroids, APH, history of PPH, previous caesarean section, prolonged labour and episiotomy, (Kongnyuy et al, 2009). In a study conducted in three districts in Central Malawi to assess and improve management of PPH in maternity units in Malawi, Kongnyuy et al, (2009), revealed that suboptimal quality of care was a major contributing factor to MDs due to PPH; these included lack of close monitoring and slow administration of intravenous fluids, (Ratsma, 2001; Graham et al, 2003). Active management of third stage of labour reduces the incidence of PPH by one-third.

It was good that all SBAs that participated in the study explained that they were competent in managing both forms of obstetric hemorrhages. This made them get well prepared with all they needed to manage it in case it occurred especially that they all had experience managing it because they have had a patient with hemorrhage at some point while on duty. This would also make them be able to identify risk factors associated with APH or PPH so that they are able to vigorously monitor such patients,
diagnose as well as treat them promptly. No woman died due to hemorrhage within the period of the study.

4.6.5.2 Obstructed/Prolonged Labour
Prolonged labour in developing countries is commonly due to Cephalo-Pelvic Disproportion, (CPD), which may result in obstructed labour, maternal dehydration, exhaustion, uterine rupture and vesico-vaginal fistula, (VVF). In some cases, prolonged labour may be due to inefficient uterin action, (Dangal, 2006). Early detection of abnormal progress of labour and the prevention of prolonged labour significantly reduce the risk of PPH and sepsis and eliminate obstructed labour, uterine rupture and thereby reduce the MM. Evidence has shown that using the Partograph to monitor the progress of labour can be highly effective in reducing complications from prolonged labour for the mother and the newborn. 41.6 percent of the obstetric complications in this study were obstructed/ prolonged labour, (Figure 13).

All participants in the study indicated that they are competent in the use of the Partograph. This indicates that they were able to monitor the progress of labour and to identify when intervention was necessary. This may also explain why there was an increased CS rate compared to normal deliveries, (Figure 14).

4.6.5.3 Pre/Eclampsia
Women with chronic hypertension who become pregnant have an increased risk of preeclampsia and adverse neonatal outcomes. One to five percent of pregnant women have chronic hypertension, defined as sustained hypertension that is present before conception or during the first twenty weeks of gestation, (Sibai et al, 1998). The rates are higher in older women, obese women, and black women. Chronic hypertension is associated with increased risks of preeclampsia and abruptio placentae, as well as increases in neonatal mortality and morbidity. Sibai et al, (1998), in a study conducted to find out the risk factors for preeclampsia, abruption placenta and adverse neonatal outcomes among women with chronic hypertension, found that the presence of
preeclampsia in a previous pregnancy, hypertension lasting at least four years, and diastolic blood pressure of at least 100 mm Hg early in pregnancy were significantly associated with a higher rate of preeclampsia.

In pregnant women, chronic hypertension has been suggested to be a risk factor for abruptio placentae, (Rey, 1994, MacCowan, 1996) and there is general agreement that the frequency of abruptio placentae is increased in women with hypertension and superimposed preeclampsia, (Idem, 1991). In addition, evidence has shown that the frequency of abruptio placentae is higher among women who had severe hypertension in the first trimester, (Sibai et al, 1998). They further found that, women who proteinuria early had in pregnancy had more preterm deliveries, more infants who were small for gestational age, higher rates of admission of infants to neonatal intensive care units, and worse neonatal outcomes for their infants than women without proteinuria early in pregnancy. A diastolic blood pressure of at least 100 mm Hg, hypertension of at least four years' duration, and a history of preeclampsia are risk factors for preeclampsia in women with chronic hypertension. In addition, the presence of proteinuria early in pregnancy and the development of pre- eclampsia in these women are associated with adverse neonatal outcomes.

In view of the above, it is therefore necessary that women start their ANC in their first trimester, in order to screen them for hypertension by regular monitoring of their BP and screening of urine for protein to rule out proteinuria because these are the major risk factors for preeclampsia and eclampsia.

4.6.6 Condition of Mother on Discharge
555 out of 556 mothers admitted to private maternity clinic in Lilongwe within the period of 1st February, 2014 to 31st January, 2015 went back home well while one died due to eclampsia.
4.6.7 Characteristics of Study Participants
The study participants consisted of eight SBAs, these comprised of three NMTs, two SRN/M, two Clinical Officers, and one obstetrician/gynecologist. Each one of these cadres of SBAs has specific scope of practice with regard to management of obstetric emergencies. The researcher decided to include a variety of SBAs because managing obstetric emergencies requires a multidisciplinary approach and team work. In the SoPK, Deming, (1990), as quoted by Knowles, (2011), defined a system as a network of interdependent components that work together to accomplish the aim of the system. When all connections and interactions are working together to accomplish a shared aim, a business can achieve tremendous results; from improving quality of products or services to raise the esprit de corp of the entire organization. Hence the multidisciplinary team members work together to offer quality EmOC.

Table 5, indicates years of experience in a maternity unit for the participants. Although some participants had 0-3 years of experience and some more than 10 years of experience, all participants stated that they have managed all the obstetric emergencies that are the leading causes of MD. These include; hemorrhage, precipitate labour, obstructed/prolonged labour, hypertensive disorders in pregnancy, sepsis and ruptured uterus. All participants stipulated that they have competency to manage the signal functions of a CEmOC facility according to their scope of practice. These are normal delivery, vacuum delivery, breech delivery, shoulder dystocia, manual removal of a retained placenta, active management of third stage of labour, active management of PPH, blood transfusion, use of Partograph, management of hypertensive disorders in pregnancy, caesarean section, evacuation of the uterus and caesarean hysterectomy. It is good that all participants stated that they are competent enough to handle all relevant obstetric emergencies because most MDs occur during labour, delivery or the first twenty four hours after delivery, and most life-threatening obstetric complications cannot be predicted or prevented. A timely diagnosis and appropriate intervention, both of which require considerable skill, can prevent morbidity.
Due to low scores attained by SBAs, (seventy five percent scored thirty five percent in EmOC competencies) in a facility based cross-sectional study on the competence of birth attendants at providing EmOC under India’s Janani Suraksha Yojana, (JSY) conditional cash transfer program for institutional delivery, Chatuverdi et al (2014) stated that institutional births do not imply access to competent EmOC. Raising competence in EmOC provision is a key opportunity to translate the large gains of institutional delivery services. Chatuverdi et al, (2014), further stated that the competence scores did not vary with participants’ age and years of experience in a maternity unit.

Graham et al, (2001), agrees with Chatuverdi et al (2014), that there is a weak relationship between SBAs at birth and reduction of MM in developing countries, especially those countries where MMR is above 200 per 100,000 live births. Low MMR associated with SBAs is largely due to identification and treatment of complications in the context of functioning health systems in high income countries. Much as the participants stated that they have competencies in management of all signal functions of a CEmOC, the information would be more credible if the researcher objectively scored their competencies.

### 4.6.8 Themes Identified from the Interviews with SBAs

Three themes were identified from the interviews that were conducted with SBAs. These are: factors that hinder timely access to quality EmOC, measures taken to prepare for obstetric emergencies and factors that facilitate SBAs preparedness for obstetric emergencies.
4.6.8.1 Factors that Affect Timely Access of EmOC

4.6.8.1.1 Human Resources
Most of the participants, especially the nurses, stated that they spend some time waiting for either the anesthetist, the doctor or the laboratory technician to perform some lifesaving procedures like evacuation of the uterus or caesarean section because these procedures are not within their scope of practice or blood grouping and cross matching by the later, (NMCM, 2007). This leads to the delay in receiving quality EmOC. This is consistent with findings by Cannoodt et al, (2012), in a study in which forty articles spanning fifteen years, were reviewed, a shortage of resources, supplies, equipment, qualified human resources including lack of specialized training were all identified as significant barriers to utilizing emergency care.

Thorsen et al, (2012), in a descriptive retrospective study where an in-depth investigation and analysis of the circumstances and events surrounding individual cases of 16 direct obstetric MDs in Lilongwe, revealed that the delay in receiving quality EmOC is typically an indication of suboptimal quality of care.

4.6.8.1.2 Support System
Participants indicated that they face challenges to access adequate quantities of blood and blood products from MBTS despite the fact that they have good working relationship with them due to lack of capacity of MBTS. The mandate of the MBTS is to provide adequate supplies of safe blood and blood products to meet the needs of all patients in all hospitals in Malawi. The MBTS works with all central, District and other hospitals in the public and private sector, College of Medicine, clinical laboratories and their staff, clinicians and related projects and the Blood Donor Association of Malawi (BDAM), in order to provide a safe and adequate blood supply to all those in need, (MBTS, 2013). The availability of safe blood for all patients depends on the extraordinary generosity of those individuals who donate it.

The blood shortage has a particular impact on women mainly due to complications of pregnancy, children with severe life threatening anemia caused by malaria and malnutrition and trauma victims. A significant number of deaths could be avoided if every hospital has access to a safe and adequate supply of this lifesaving resource.
This can only be achieved through a significant increase in the number of people who are willing to donate blood regularly, (MBTS, 2013).

Participants also revealed that sometimes it is difficult for them to get an ambulance when they have a patient for urgent referral. The EFQM model, (Knowles, 2011) describe enablers as those processes, systems and behaviors that need to be in place and managed to deliver excellence; these include leadership, strategies, people, partnerships and resources, processes, product and services. Developing a good long term working relationship with service providers would lead to excellent customer service. It would therefore be effective for the management of this private clinic to establish partnerships that would push service providers to take an extra mile to help the clinic achieve excellent customer service. The importance of a good referral system and the timely access to adequate, safe blood and blood products in the provision of quality EmOC cannot be overemphasized.

4.6.8.2 Measures taken in Preparedness for Obstetric Emergencies

4.6.8.2.1 Effective Management of Resources
Effective management of both human and material resources plays a very crucial role in the provision of quality EmOC. Chaturvedi et al, (2014) stipulated that ensuring that facilities can provide adequate EmOC involves strengthening the supply side of the health system through upgrading physical structure, the recruitment and training of staff to deliver care, ensuring adequate medical supplies and equipment and having a functioning referral system.

Most of the study participants stated that at the beginning of each shift, they check, document and restock the emergency trollies to ensure that they have all that they need if they have an obstetric emergency. They ensure that each item in the trollies is placed where it is supposed to be at all times and in right quantities so that they do not look for it when managing an emergency. Checking of equipment at the beginning of a shift to ensure that it is in a good working condition also serves the time when they would be
trying to fix a fault when they need to assist a patient. This entails good organizational skills.

Proper induction and orientation of new members of staff is very crucial to enable them adapt to the new environment. This also enables team building, thereby enhancing team work. Good orientation enables new members of staff to attain new skills that are specific to the institution like the compulsory need for all nurses to be able to scrub in theatre. This may help save waiting time for a nurse to come from home to assist with the scrubbing if those on duty are not competent to scrub.

Much as attainment of prescribed minimum CPD points for nurses and clinical staff is compulsory requirement for renewal of registration with Medical Council of Malawi and the Nurses’ and Midwives Council of Malawi,(NMCM, MCM), participants are motivated to participate and conduct CPD meetings because these meetings provide learning opportunities where their patient management interventions and decisions are discussed and evaluated for improvement in the future. Participants also stated that the hand over meetings at the change of shifts is also another learning opportunity for them. Fraser et al, (2010), described a system of feedback where staff reflects upon and share experiences in a no blame environment so as to create a self-reflective organization with memory, a risk management strategy. Likewise, Knowles, (2010), described the process where an organization internally audits adherence to policies and procedures, keeping records of audits as a self-assessment model of quality management.

Participants stated that they ensure adequate numbers of staff on each shift. However, this does not only consider the numbers but also qualities. They stated that staffs with diverse skills and competencies are put on the same shift to ensure quality care and to facilitate transfer of knowledge and skill from one another while on the job. Miller,
(1990), in a framework for clinical assessment, portrays competence as a stage that follows knowledge acquisition and leads to performance, the ability of apply knowledge in concrete situations.

4.6.8.2.2 Good provider-patient communication
Most of the participants described that all patients that attend the clinic are given a card that contains the contacts for the clinic and that of the doctor. They are encouraged to communicate whenever necessary through the phone or email. This they said helps the members of staff to prepare well in advance if a patient calls that she is coming with for instance, severe vaginal bleeding in pregnancy, so they know what exactly to anticipate. Hence they prepare all possible resources that may be required before a patient arrives. This ensures timely provision of EmOC, excellent quality care thereby exceeding patients’ expectations. The communication also helps service providers to build good interpersonal relationships with their clients because they are the first point of information whenever they need to ask for opinion about their health and well-being with regard to their pregnancy. A good and trust worthy business relationship with service users enables quality.

One-on-one patient education is offered to all clients depending on specific needs. Information given to the clients empowers them to make informed decisions about their health which influences the outcome of the pregnancy. Clients are able to differentiate normal from abnormal symptoms hence they are able to decide to report to the service providers timely either by calling to seek advice or rushing to the clinic so that they may be properly assessed. It is more efficient to offer one-on-one patient education because every patient is unique, and each one goes through different situations much as they have the same diagnoses. Sometimes patients are not flexible to share their experiences with fellow patients to secure their confidentiality; hence they find it more comfortable to discuss their experiences with their service providers in confidence. Maine, (1993) postulated that while ANC is very useful and should continue to be strategy for improved health facility utilization during pregnancy and delivery, it must be ‘focused/client centered’ and deemphasize individual risk assessment. Current best
practices suggest that we categorize every pregnant woman as being at risk of possible obstetric complications and death.

The Maternal and Neonatal Health (MNH) of the JHPIEGO developed a comprehensive strategy to promote and improve the timely use of skilled maternal and neonatal care. The premise underpinning the strategy is that preparing for birth and being ready for complications reduces all three phases of delays. BP/CR addresses these three in the continuum of pregnancy, labour and childbirth, and postpartum and newborn care:

- The individual and family learn to recognize danger signs, identify a skilled provider and birth location, save money, identify potential blood donors, designate a decision maker and arrange for transportation;
- The communities; like families, make arrangements to retain money, transport or blood donor to assist the women in receiving care in case of an obstetrical emergency;
- The health facility; ensure that the required equipment, supplies and support systems are available;
- The provider; clinical personnel acquire or improve the necessary knowledge and skills needed to attend normal childbirth and manage obstetric and newborn complications;
- Policy makers; institutionalize evidence based healthcare policies and assure adequate funding for maternal and newborn services.

### 4.6.8.3 Factors that Facilitate SBAs Preparedness for Obstetric Emergencies

#### 4.6.8.3.1 Institutional Policies

It has been observed that some women in Malawi are dying even when they reach a CEmOC facility where the quality of care is expected to be high and the MM low. Combs Thorsen et al, (2014), in a descriptive cross-sectional study conducted to describe some of the breakdowns within the maternal healthcare system that might have potentially contributed to the MDs in Lilongwe District, found that some existing
policies were not fully understood by the members of staff or procedures were not executed in a standardized way and they were not even monitored.

However, some participants in this study clearly demonstrated that they fully understand their institutional policies and procedures. The gave examples of the procurement process, that once the minimum stock levels are reached, they order more stocks to ensure that they do not run out of any stocks because this may hinder the timely provision of quality care to their clients. Some participants also mentioned that they service all equipment in time to ensure efficiency and most of the participants stated that it is their policy to check, document and restock all emergency trollies at the beginning of each shift to ensure that they are ready with all that they may need in case of emergencies. One other policy that was mentioned as one of the preparation measures for obstetric emergencies is that of ensuring all shifts are well covered in terms of adequate staffing and diverse competencies of members of staff working on each shift. This policy empowers some senior members of staff to deploy locum staff to ensure that all shifts are well covered. Ijadunola et al, (2010), agrees with the above that staff with appropriate obstetric training and skills in sufficient numbers should be deployed to facilities that offer maternity services to ensure favorable maternal and fetal outcomes during the provision of EmOC services.

4.6.8.3.2 Enabling Environment
According to EFQM, excellent organizations have leaders who lead with vision, inspiration and integrity, acting as role models for values and ethics and succeeding through people by valuing and empowering staff and seeking a balance between organizational and personal goals, (Knowles, 2011). (Deming, 1990), stated that people are an important part of the system. In order to pull off effective quality improvement efforts, know how to motivate team members and be able to resolve conflicts among them.
Ijadunola et al, (2010) described upgrading the infrastructure of community health centers and referral hospital and providing necessary and essential drugs, supplies and equipment for the timely delivery of services at all times as one of the strategies that may ensure that pregnant women in whom complications develop, have access to the medical interventions of EmOC. Most of the study participants demonstrated that they are well motivated to offer timely quality EmOC because management ensures that all the necessary resources that they need to render service to all clients are available at all times. Participants stated that they ensure that they organize their resources at the beginning of each shift. These include; drugs, supplies and equipment as evidenced by knowing their stock quantities, where the stocks are kept and the regular checking and servicing of all equipment at the institution. Combs Thorsen et al, (2014) stated that the availability of equipment, drugs and supplies for use by staff provides an enabling environment to staff which may motivate or increase staff confidence in performing up to standard.

Some participants described the regular handover meetings at the beginning and end of each shift as one of the processes that provide learning opportunities to reflect and evaluate the care given to their clients. In the theory of knowledge, Deming (1990) as quoted by Knowles, (2011), stipulated that we must seek to learn from our experiences. Seek to understand the effects of our decisions and changes look for evidence and judge based on that. This enables them get constructive criticism and feedback from colleagues thereby improving their knowledge and skills.

The availability of up-to-date technology, (the internet access) and other professional literature like books that facilitate their learning also provides an enabling environment that help motivate members of staff and gives them confidence to know that they are rendering up-to-date, evidence based standard of care to the clients.
4.6.8.3.3 Support Services
Members stated that the institution has good relationship with stakeholders who offer them other supporting services e.g MBTS, the tertiary referral hospital and the ambulance service provider as well as suppliers. These services are also readily accessible at all times. The private maternity clinic is situated five kilometers away from a public tertiary institution where some patients are referred to when there is need for other specialized care that the clinic does not offer, (e.g. ICU services) much as it offers CEmOC services. The presence of good infrastructures e.g. good road network system, good communication infrastructures (like phone) with the referral institution makes it easier and does not take a lot of time for a patient to access timely care at the tertiary institution.

The clinic is also five kilometers away from MBTS where they order blood and blood products. The distance and the good relationship that the two institutions have make it possible for the SBAs at the clinic to provide timely blood transfusions to save lives of mothers. The EFQM Model of Quality management emphasizes the importance of good partnership with stakeholders including suppliers in meeting or exceeding customer expectations, (Knowles, 2011).

4.7 Limitations
Observation of some of the measures and structures that participants described as preparedness for obstetric emergencies would have given credence to the findings of this study; most participants mentioned that they check, document and restock the emergency trollies, The researcher should have checked the register for the emergency trollies to verify this information;

Most participants also mentioned that they do in-service trainings/CPD meetings and handover meetings at the change of shifts which provide opportunity for learning to improve knowledge and skills; the researcher should have also observed a session or two to verify if the meetings are really educational.
Part of the study used retrospective secondary data extracted from antenatal and maternity registers. Some of the data were not complete in the registers e.g. 4.8 percent of ANC mothers gravidity; 4.6 percent of ANC mothers age; 2.9 percent of maternity admission age; 14 percent of gestation of maternity admissions were not indicated in the registers. This data would have given more meaning to the study findings if it was properly documented.

4.8 Conclusion
This chapter has discussed the findings of the study on the prevalence of and SBAs preparedness for obstetric emergencies at a private maternity clinic in Lilongwe. The findings of this study indicate that primiparity, previous CS, hypertensive disorders in pregnancy, HIV in pregnancy, teenage pregnancy, and anemia in pregnancy are the common risk factors identified in antenatal mothers. The common obstetric complications that occurred during the period of the study were obstructed/ prolonged labour, (41.6 percent), hemorrhage, (38.1 percent) and pre/eclampsia, (10 percent). The clinic recorded a CS rate of 63.2 percent and a normal delivery rate of 35.7 percent. Out of 283 live births, there was one MD due to eclampsia. All participants indicated that they were competent in management of all the above risk factors and complications despite their differences in years of working experience in a maternity unit.

Three themes were identified from the one-on-one in depth interviews with the SBAs; factors that hinder timely provision of EmOC, measures taken to ensure timely provision of quality EmOC, and structures and processes that promote timely provision of quality EmOC. The following are factors that hinder timely provision of quality EmOC at the private maternity clinic in Lilongwe; inadequate staff and ineffective support system. Good management of human and material resources and good communication with patients and patient education are measures that promote provision of quality EmOC. The study identified the following structures and processes that promote timely provision of quality EmOC; good institutional policies on human and material resource
management, provision of an enabling environment that promote staff efficiency and motivation as well as a good support system.

The next chapter will present conclusions drawn from the findings of this study and recommendations will be made based on the study findings.
CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION
This chapter presents conclusions and recommendations drawn from the previous chapter, discussion of findings, based on the following study objectives as presented in chapter one of this paper:

- To critically review literature on the prevalence of and SBAs’ preparedness for obstetric emergencies.
- To assess the prevalence of obstetric emergencies at a private maternity clinic in Lilongwe within the period of 1st February, 2014 to 31st January, 2015
- To explore factors that affect timely access to quality EmOC services at a private maternity clinic in Lilongwe.
- To recommend a project that will strategize emergency preparedness measures which SBA need to take in order to reduce maternal morbidity and mortality rate by at least twenty percent.

5.2 CONCLUSION
Based on the findings of this study, the following conclusions have been made by the researcher:

- Every pregnant woman should have access to timely, quality EmOC. Various risk management strategies need to be employed by all SBAs for them to offer timely quality EmOC. These strategies should address the three delays in Maine and Thaddeus’ Three Delay Model; Delay in deciding to seek healthcare services, delay in reaching the healthcare facility and delay in accessing healthcare at a facility.
- Focused/ patient centered ANC has proven to be the best platform for identifying and managing risk factors that predispose mothers to obstetric complications. Evidence also shows that ANC offers an opportunity for BP/CR for the mother
and the family, the community, the institution rendering EmOC, the service provider as well as policy makers. It is therefore crucial to enhance patient education on possible pregnancy related complications and their danger signs to empower them to prepare to give birth with a SBA.

- The role of management in reinforcing policies and decisions regarding quality patient care cannot be overemphasized. The commitment of management in risk and quality management policies helps to motivate staff to perform according to the desired standards of care thereby meeting or exceeding patients’ expectations.

6.3 Factors affecting timely access of quality EmOC
The study showed that the following factors influence the timely access to quality EmOC:

6.3.1 Enabling Environment (EE)
- Availability of adequate members of staff on duty, with diverse knowledge and skills.
- Regular in-service training for staff to update their knowledge and skills depending on learning needs.
- Provision of learning materials like internet and books to members of staff at all times
- Objective and focused interaction among team members to evaluate the outcome of decisions made with regards to patient care.
- Regular provision of material resources e.g. relevant equipment, drugs and sundries.
- Enforcement of institutional policies that empower staff to make various decisions that affect timely provision of quality EmOC

6.3.2 Communication with clients
- Create a good interpersonal interaction between care givers and service users.
• Encourage clients to call service providers whenever they experience abnormal symptoms or when they are not sure of what to do.
• Patient education based on individual needs and experiences.

6.3.3 Effective support system
• Establish good partnership with stakeholders e.g. MBTS, Ambulance service providers, Tertiary Referral institution and suppliers.

6.4 Recommendations
In view of the above findings; the researcher would like to make the following recommendations:

• A project that will formulate a standard and objective risk and quality management tool for BEmOC as well as CEmOC facilities.
• A project that would focus on training, monitoring and evaluating SBAs pre-emergency preparedness competencies for obstetric emergencies.
• Reinforce commitment of management in all BEmOC and CEmOC facilities in risk and quality management policies.
• A similar study may be conducted in public and CHAM institutions because the challenges those private institutions may face would not be the same as those in CHAM and public institutions.
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4. Barton JR, Bergauer NK, Jacques DI, Coleman SK, Stanziano GJ, Sibai
15. Christian, Michael D; Kollek, Daniel; Schwartz, Brian CJEM Emergency preparedness: what every health care worker needs to know. Journal of the Canadian Association of Emergency Physicians; Sep 2005; 7, 5; ProQuest Central pg. 33


95. www.mbtsmalawi.com

APPENDIX I: TIMEFRAME FOR THE DISSERTATION

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<td>Wed 11/28/14</td>
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<td>Wed 12/2/14</td>
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<td>10 days</td>
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APPENDIX II: QUESTIONNAIRE 1

An Assessment of the Prevalence of and Preparedness for Obstetric Emergencies at a Private Maternity Clinic in Lilongwe

Review and summarize the following Records:

**Antenatal Register**

1. Total Number of Antenatal Mothers in a Month ..........................

2. Age Range of Antenatal Mothers
   1. 14 to 19
   2. 20 to 24
   3. 25 to 35
   4. 36 to 45
   5. 46 to 55
   6. Unknown

3. Gravidity
   1. 1 to 4
   2. 5 to 10
   3. Unknown

4. Parity
   1. 0 to 4
   2. 5 to 10
   3. Unknown

5. Area of Residence:
   1. Rural
   2. Urban
   3. Semi Urban
   4. Unknown

6. Potential Risk Factors Identified during Antenatal Visits
   1. Early Pregnancy
   2. Grand Multiparity
   3. Hypertensive Disorders
   4. Other medical conditions
   5. HIV Reactive
6. STI Positive
7. Low Hemoglobin Levels
8. Big fundus
9. Twin gestation
10. Previous Caesarian Section
11. Malpresentation/ Malposition
12. None

B. Review and Summary of Maternity Register
1. Total number of Admissions in a month
2. Age range
   1. 14 to 19
   2. 20 to 24
   3. 25 to 35
   4. 36 to 45
   5. 46 to 55
   6. Unknown
3. Area of residence
   1. Rural
   2. Urban
   3. Semi Urban
   4. Unknown
4. Marital Status
   1. Married
   2. Single
   3. Other
5. Gravidity
   1. 1 to 4
   2. 5 to 10
   3. Not indicated
6. Parity
   1. 0 to 4
   2. 5 to 10
   3. Not indicated
7. Gestation on Admission;
   1. 1\textsuperscript{st} Trimester
   2. 2\textsuperscript{nd} Trimester
   3. 3\textsuperscript{rd} Trimester
   4. Term Fundus
   5. Unknown

8. Diagnosis on Admission
   1. Hypertensive Disorders
   2. Labour
   3. Hemorrhage
   4. Retained Products of Conception
   5. Preterm Labour
   6. PROM/PPROM
   7. Other

9. Obstetric complications:
   1. Hemorrhage
   2. Obstructed/ Prolonged labour
   3. Pre/Eclampsia
   4. Sepsis
   5. Ruptured Uterus
   6. Other
   7. None

10. Diagnosis on Discharge
    1. SVD
    2. Vacuum Delivery
    3. Breech Delivery
    4. Caesarian Section
    5. Evacuation of the Uterus
    6. Hysterectomy
    7. Other

11. Condition of mother on discharge
    1. Well
    2. Referred
    3. Other
APPENDIX 3: QUESTIONNAIRE 2

An Assessment of the Prevalence of and Preparedness for Obstetric Emergencies at a Private Maternity Clinic in Lilongwe

Introduction

Malawi has one of the highest MMR in the world, 675 deaths per 100,000 live births. Despite efforts made by the Government of Malawi and its development partners, evidence reveals that MDG5A will not be met by 2015. This therefore calls for more action from all stakeholders.

The provision of quality EOC services is one of the ways of reducing MDs. Healthcare providers need to be well prepared for obstetric emergencies at all times to enable them render quality EOC. However, not much has been documented on HCW preparedness for obstetric emergencies in Malawi. The aim of this study is to assess the prevalence of and HCW preparedness for obstetric emergencies. This would enable the researcher to recommend strategies that may guide HCW to provide quality EOC.

This questionnaire is for HCW who offer hands on EOC in a maternity unit, these may include nurses, doctors and clinicians; and they shall be called participants.

Kindly note that participating in this study is voluntary and participants have a right to withdraw at any point without being coerced to change their minds. The researcher would like to know your views, opinions, experience and observations on issues of EOC. Please feel free to express yourself.

Kindly be informed that the researcher will ensure the privacy and confidentiality of all information that you shall provide. However, as a participant of this study, you have the right to know the findings of the study if need be. No arranged incentives shall be provided for participants in this study.

Kindly sign the informed consent form. Please note that this will not be used to identify you as it will be kept separate from all other information. If you have any questions please do not hesitate to contact the researcher.

Thank you for your support.
1. What is your qualification?
   1. Nurse Midwife Technician
   2. Registered Nurse/Midwife
   3. Clinical Officer
   4. Medical Doctor
   5. Other

2. Years of Experience in a Maternity Unit
   1. 0 to 3
   2. 4 to 6
   3. 7 to 10
   4. 10 and above

3A. Have you ever undergone any in service training in the management of obstetric emergencies?
   1. Yes
   2. No

3B. If yes, when was that?
   1. Less than 6 months ago
   2. 6 months to 2 years ago
   3. 2 years to 5 years ago
   4. More than 5 years ago

4A. Have you ever managed an obstetric emergency while on duty?
   1. Yes
   2. No

4B. If yes, what type of emergency was it?
   1. Hemorrhage
   2. Precipitate Labour
   3. Obstructed Labour
   4. Pre/Eclampsia
   5. Septic shock
   6. Other

5. What challenges do you encounter during management of obstetric emergencies?
6. What measures do you take to prepare for any obstetric emergency in this maternity unit?

7. What structures do you have to enable you handle obstetric emergencies at this institution?

8. Are you competent enough to manage the following emergencies?

   1. Normal Delivery
   2. Vacuum Delivery
   3. Breech Delivery
   4. Shoulder Dystocia
   5. Manual Removal of Placenta
   6. Active Management of Third Stage of Labour
   7. Management of Antepartum Haemorrhage
   8. Active Management of Post-Partum Haemorrhage
   9. Blood Transfusion
   10. Use of Partograph
11. Management of Hypertensive Disorders in Pregnancy
12. Caesarian Section
13. Evacuation of the Uterus
14. Caesarian Hysterectomy

9. Does this institution have a protocol on the management of obstetric emergences?
   1. Yes ....................
   2. No .....................

Thank you!
APPENDIX 4 – INFORMED CONSENT FORM

“A Study on an Assessment of and Preparedness for Obstetric Emergencies at Private Maternity Clinic in Lilongwe”

*This form is to be completed independently by the participant*

Name of the participant: ___________________________________

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I have read and understood the attached information sheet and have had the opportunity to ask questions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR: I have had the attached information sheet explained to me and have had the opportunity to ask questions.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>I understand that I can withdraw from the study at any time without having to give any reasons.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I understand that withdrawing from the study will not affect me and my profession</td>
<td></td>
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<tr>
<td>4.</td>
<td>I am aware of, and consent to the tape recording of my discussion with the researcher, OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I am aware of, and consent to the researcher taking notes during the course of the interview.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I agree to the publication of the results if need be and I understand that I will not be identified in these publications.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>I give consent that I would like to be involved in this research project.</td>
<td></td>
</tr>
</tbody>
</table>

SIGNATURE: ______________________________
THANK YOU VERY MUCH!