ASSESSMENT OF MIDWIVES' AND CLINICIANS' ADHERENCE TO NATIONAL OBSTRUCTED LABOUR MANAGEMENT PROTOCOLS AT THYOLO DISTRICT HOSPITAL, MALAWI

MSc. (REPRODUCTIVE HEALTH NURSING) THESIS

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Declaration

I, Esmie Chamalawa Kamaliza, declare that this thesis is my own original work, and that it has not been presented and will not be presented to any other University for similar or any other degree award. Where other researchers work has been used acknowledgements have been made in text.

ESMIE CHAMALAWA KAMALIZA

Full Legal Name

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Signature

_____

Date

Dedication

This work is dedicated to my husband Umali Kamaliza who supported me tirelessly until I completed the course. To my two children Dalitso and Nuh Kamaliza, thank you so much for your understanding you accorded me throughout the entire process.

May the almighty God bless them abundantly.

Acknowledgement

I thank God, the father almighty, without whom none of this would have been possible, and through whose grace, I have come this far.

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Abstract

Obstructed labour is a significant cause of maternal and neonatal mortality at Thyolo District Hospital. This study aimed to investigate midwives' and clinicians' adherence to obstructed labour management protocols in order to better understand the gaps in providing quality of care. Key results show an adherence rate of 24% to obstructed labour management protocols at Thyolo District Hospital which indicate poor quality of care to obstructed labour women.

This study was a descriptive cross-sectional study conducted at Thyolo District Hospital. The study populations were all case files of women with obstructed labour managed from 1st July 2015 to 30th June 2016. Simple random sampling was used to obtain 90 case files of women that experienced obstructed labour. Data was collected using an audit checklist and checklist for structural factors. Data was analyzed using SPSS version 16.0 and results were presented using descriptive and inferential statistics. Ethical clearance was obtained from College of Medicine Research and Ethics Committee (COMREC). Permission to conduct the study was obtained from the District Health Officer, Thyolo District Hospital.

Factors that contributed to low adherence were lack of supervision, inadequate resources and lack of performance appraisals. Generally, Midwives and clinicians are not adhering to obstructed labour management protocols at Thyolo Hospital. Supervision, performance appraisal, human and material resources are needed to promote adherence.

Key words: obstructed labour management protocols, adherence

Table of contents

List of figures

List of Tables

List of Appendices

List of Abbreviations

APGAR:	Appearance, pulse, Grimace, Activity and Respirations
CS:	Caesarean section
CCAP:	Church of Central Africa Presbyterian
CPD:	Continued Professional Development
COMREC:	College of Medicine Research and Ethics Committee
CO:	Clinical officer
DHO:	District Health Officer
DMO:	District Medical Officer
DNO:	District nursing officer
HB:	Haemoglobin
IMNH:	Integrated Maternal and Newborn Health
KCN:	Kamuzu College of Nursing
MA:	Medical Assistant
MD:	Medical Doctor
MICS:	Multiple Indicator Cluster Survey
MDG:	Millennium Development Goal
MDHS:	Malawi Demographic Health survey
MOH:	Ministry of Health
MU:	Mega Units

OLMP: Obstructed Labour Management Protocols

RVF: Recto-Vagina Fistula

SPSS: Statistical package for social scientists

USAID: United States Agency for International Development

UNESCO: United Nations Educational Scientific and Cultural Organization

VVF: Vesico-Vagina Fistula

WHO: World Health Organization

Operational Definitions

Alert line: This is a line that indicates how labour is progressing in terms of cervical dilatation during the active phase of the first stage of labour. Normally cervical dilatation progresses at 1cm per hour in the active phase of labour and should remain on or to the left of the alert line.

When dilatation crosses to the right it is a warning that labour may be prolonged (i.e. if labour is progressing at less than 1cm per hour).

Action line: This is an oblique line which is 4 hours to the right of the alert line in primigravida and multipara. If a woman's labour reaches this line, a decision must be made about action to be taken.

Adherence: Performing exactly according to set rules,standards/protocols

Birth asphyxia: Failure of a baby to establish breathing at birth

Clinician: A person qualified in the clinical practice of medicine

Complete adherence: Adherence to all the steps of obstructed labour management protocols

Fresh stillbirths: It is the fetal death at or after 20 to 28 weeks of pregnancy and results in a baby born without signs of life.

Incomplete adherence: Non-adherence to some steps of obstructed labour management protocols or missed steps of obstructed labour management protocols.

Midwife: A person trained to assist women during childbirth

Obstructed labour: Labour where there is no advancement of the presenting part despite strong uterine contractions. The obstruction usually occurs at the pelvic brim but may occur in the cavity or outlet of the pelvis.

Maternal death: Death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of its duration and site, from any cause related to or aggravated by the pregnancy or its mismanagement, but not from accidental causes.

Maternal mortality ratio: Number of maternal deaths per 100,000 live births, due to

complications of, or medical conditions aggravated by pregnancy, childbirth, or postnatal period up to six weeks after delivery.

Quality of care: Quality of care refers to the provision of care that meets some specified criteria or proper performance according to established management guidelines.

Protocol: A comprehensive set of rigid criteria outlining the management steps for a single clinical condition.

Chapter One
Introduction and Background

Introduction

Globally, obstructed labour occurs in 5% of all pregnancies and accounts for about 3.1 % of maternal deaths (Kassenbaum, 2016). Obstructed labour is one of the five major obstetric complications that contribute to over 70% of all maternal deaths in developing countries, with the majority occurring in Sub-Saharan Africa (World Health Organization [WHO], 2015). In Malawi, Twenty percent of maternal deaths are caused by obstructed labour and 22% of neonatal deaths are caused by birth asphyxia of which one of the contributing factors is obstructed labour (Integrated Maternal and Neonatal Health [IMNH], 2015). Most maternal deaths are preventable if maternal complications are recognized earlier and timely care is given. Therefore, adherence to obstructed labour management protocols is the most effective way to prevent and reduce maternal and neonatal mortality and morbidity (Khonje, 2012; Kongnyuy, Mlava & Broek, 2009). Specific skills required for the management of obstructed labour include assessing pelvic outlet, diagnosing presentation and position of the baby, assessing descent of the fetal head, recognizing obstructed labour and conducting vacuum extraction or caesarean section. In addition, the general skills required for the management of obstructed labour are; urinary catheterization, taking blood samples for analysis, setting up and monitoring an intravenous infusion, administering antibiotics, maintaining fluid balance and maintaining records (WHO, 2009). Therefore, in Malawi, Ministry of Health (MOH) through the Reproductive Health Directorate formulated and distributed obstructed labour protocols to all health facilities in Malawi in 2004. The protocols were intended to serve as a quick reference tool to health care providers hence helping them with the ability to diagnose and manage women with obstructed labour. The protocols were developed to combat

obstructed labour related mortality and morbidity (Chikuse, Chirwa, Maluwa, Malata&Odland, 2012). In addition, the obstructed labour management protocols were developed in order to improve the quality of care, reduce the variation of practice and ensure that evidence is actually used when appropriate. Conversely, the efforts are not bearing fruits because poor compliance with obstructed labour protocols has been documented (Chodzaza, 2008; Khonje, 2012). In addition, a study by Mandiwa and Zamawe (2017) has also found that there was poor monitoring of the progress of labour at Thyolo hospital. Similarly, a study conducted by Van den Akker, Mwagomba, Irlam, & van Roosmalen (2009) found that there was poor follow-up of laboring women and delayed actions of findings on the labour chart at Thyolo hospital. This raises question about the utilization of the protocols and to date, adherence of midwives and clinicians to obstructed labour management protocols is unknown.

Health care providers may not adhere to obstructed labour management protocols for various reasons which include high workload, lack of supervision, lack of essential resources, low motivation and absence of protocols (Kayiga, Ajeani, Kiondo& Kaye, 2016 ; Khonje, 2012;Chodzaza, 2008). A study by Mgaya,Kidanto,Nystrom and Essen (2016) found that adherence to obstructed labour protocols reduced neonatal distress and fresh still births from 16% to 8.8%. The study concluded that there is a need for regular evaluation of protocols in order to determine what works and what does not work. In Malawi, no study was conducted on assessing midwives and clinicians adherence to obstructed labour management protocols. Few studies have been conducted just targeting one component of obstructed labour management protocol which is the partograph. Therefore, there was need to investigate midwives and clinicians' adherence to obstructed labour protocols at Thyolo hospital in order to know the type of care which was rendered to women with obstructed labour.

Background of the Problem

In Malawi, many women are dying due to poor obstetric care (Chodzaza, 2008). Similarly, Thyolo District Hospital is not spared as maternal and neonatal deaths are high, due to obstructed labour. From the 1st of July 2015 to the 30th of June 2016, the hospital experienced 19 maternal deaths and 200 neonatal deaths and 21 % of maternal deaths were due to ruptured uterus which is a complication of obstructed labour. In addition, 13% of neonatal deaths were due to birth asphyxia secondary to obstructed labour (Facility Safe Motherhood Report, 2015-2016). This prompted the researcher to identify the extent to which obstructed labour management protocols are used by midwives and clinicians when making clinical decision on women with obstructed labour. The low quality of obstetric care is associated with health care provider's lack of knowledge and skills when they are providing bedside care. Evidence-based research which has been conducted by Kongnyuy,Mlava and Van den Broek(2009) in nine hospitals of Central region of Malawi has clearly indicated that comprehensive implementation of obstructed labour protocols is paramount in prevention of maternal deaths.

Literature under subject has shown that health care providers greatly influence the outcome of obstructed labour. Therefore, compliance with management of obstructed labour standards and guidelines helps to achieve optimum outcome for the woman and her baby (FIGO Safe Motherhood and Newborn Health (SMNH) Committee, 2012). Effective implementation of care to patients and clients should ensure guidelines adherence in practice and subsequently, this will lead to an improved patient outcome (Lugtenberg, Burgers & Westert, 2009). In Malawi where maternal and neonatal mortality due to obstructed labour are a great burden, the compliance rate of midwives and clinicians to obstructed labour management protocols is unknown. A study was

conducted to investigate the adherence to obstructed labour management protocols by clinicians and midwives working at Thyolo Hospital.

Problem Statement

Malawi has a high maternal mortality rate of 439 per 100,000 live births with obstructed labour being one of the contributing factors (Malawi Demographic Health Survey [MDHS], 2016). Similarly, Thyolo District Hospital is not spared as maternal and neonatal deaths due to obstructed labour are high. Thyolo facility report further revealed that 21% of maternal deaths were due to ruptured uterus which is a complication of obstructed labour and 13% of neonatal deaths were due to birth asphyxia secondary to obstructed labour. Thyolo Hospital had 737 obstructed labour deliveries out of 16,873 which represent 4.4% (unpublished Safe Motherhood Facility Annual Report, 2015-2016). The numbers of maternal deaths are high and Malawi through its health delivery points like Thyolo hospital needs to put in more effort in accelerating reduction of maternal mortality rate in order to contribute positively to the global target of reducing maternal mortality ratio to less than 70 per 100,000 live births by 2030 (sustainable development Goals, 2015).

Adherence to obstructed labour management protocols is paramount in the prevention of maternal and neonatal deaths. However, studies have shown that the care rendered to women with obstructed labour at Thyolo hospital was of poor quality (Van den Akker, Mwagomba, Irlam, & van Roosmalen 2009; Mandiwa & Zamawe, 2017). Therefore, a study to investigate midwives and clinicians adherence to national obstructed labour management protocols at Thyolo District Hospital was essential in order to better understand the gaps in providing quality of care which may contribute to the reduction in maternal deaths in Malawi.

Justification of the Study

According to unpublished safe motherhood facility annual report of 2015-2016, Thyolo district hospital has been experiencing increased maternal and neonatal deaths. Critical analysis of the report does not show the factors contributing to such a high maternal and neonatal deaths. The report also does not tell us how women with emergency obstetric complications are managed and generally handled. The report was silent on the issues surrounding the increased maternal and neonatal deaths and does not necessarily relate the increased maternal and neonatal to quality of obstetric care. Therefore, it was important to conduct such a study in order to find out major issues related to management of emergency obstetric complications with much focus on obstructed labour. It was necessary to investigate midwives and clinicians' adherence to obstructed labour guidelines and protocols to understand areas of strength as well as performance gaps in provision of care that might need to be addressed in order to bolster implementation of current national obstructed labour management protocols. Results obtained from the study will inform practice in the prevention and management of obstructed labour.

Broad Objective

The main aim of the study was to investigate adherence of midwives and clinicians to national obstructed labour management protocols.

Specific objectives

1. To assess the performance of midwives and clinicians in line with obstructed labour management protocols.
2. To assess birth outcomes of women managed for obstructed labour.
3. To identify factors that influence labour outcomes in the women managed for obstructed labour
4. To identify factors that influence compliance of midwives and clinicians to obstructed labour management protocols.

Chapter Two

Literature Review

Introduction

This chapter presents previous studies conducted in relation to obstructed labour management. A literature search was done using the electronic data bases of Pub Med, EBSCO Host, World Health Organization and Google scholar papers. Keys terms used were obstructed labour and obstructed labour management protocols. Boolean words “OR” and“AND” were used. The search terms used were obstructed labour management protocols and health workers adherence. The literature review focused on English articles and books published between 2006 and 2018. Some few articles and books of later than 2006 whose information was relevant to the study and such information was not found in the recent publications were also used.

Globally, many studies have been focusing on partograph which is one of the steps of obstructed labour management protocols. The literature review of other studies was done to understand the important aspects of obstructed labour which include causes and effects of obstructed labour, obstructed labour management protocols, outcome of adherence to obstructed labour management protocols and factors that influence the use of obstructed labour management protocols.

Causes and effects of obstructed labour

Obstructed labour is failure of the presenting part of the fetus to descend into the birth canal despite good uterine contractions (Fraser & Cooper, 2009). Common cause of obstructed labour is Cephalo- Pelvis Disproportion (CPD) which occurs when the fetal head cannot descend through the mother’s pelvis due to reduced pelvic dimension. Childhood malnutrition, stunting,

infection, poliomyelitis and deformity are factors which may contribute to women having inadequate pelvic dimensions to allow passage of the fetus (WHO, 2008). CPD may also occur when the presenting part of the fetus is malpositioned or there is malpresentation of the fetal part e.g. brow, compound, occipto-posterior and face. In addition, congenital malformation like hydrocephalus, fetal ascites and locked twins can lead to reduced passage in the birth canal (Fraser & Cooper,2009).Other causes of reduced pelvic dimensions include fibroids, ovarian tumors impacted in the pelvis (WHO, 2008).

In addition to simple mechanical obstructed, complications to the mother or fetus/neonate can arise from a number of factors. In the fetus, intracranial hemorrhage may occur due to severe molding of the head due to traumatic delivery, fetal hypoxia and maternal acidosis. If the duration of obstructed labour is prolonged without intervention, the fetus dies because of anoxia by excessive pressure on the placenta and umbilical cord. The decay of fetal demise triggers the coagulation failure and prolonged uterine contractions which may result in rupture of the uterus. Ruptured uterus lead to hemorrhage and hemorrhagic shock, peritonitis, septic shock and death (WHO, 2008). Severe morbidities such as vesico-vagina fistula, chronic pain and mental retardation in children results from obstructed labour (Salama,Abdallah &Heeba, 2010).

Obstructed Labour Management Protocols (OLMP)

A clinical guideline or protocol is a statement that promotes or advocates a particular course of action in clinical care (Lugtenberg et al., 2009). Clinical protocols are formal pathways with specific inclusion and exclusion criteria that provide standardized algorithms for caring for patients with specific conditions. It is a recommended approach of solving a clinical problem which is presented in form of a flow chart or text. Similarly, obstructed labour management

protocols are a comprehensive set of rigid criteria outlining the management steps for obstructed labour.

Obstructed labour management protocols were developed in 2004 and revised in 2008 and 2011. Protocols were developed with representatives of health care providers from all hospitals in Malawi and policy makers from the Ministry of Health Headquarters. The development of the protocols was guided by the Malawi national guidelines and World Health Organization manuals (Kongnyuy, Mlava & Broek 2008). The protocols were revised at the Enhancing human resources and The use of Appropriate Technologies for Maternal and perinatal survival in sub- Saharan Africa (ETATMBA) project in 2011 by Dr Mhango.

Generally, proponents of hospital protocols argue that clinical protocols help to standardize care and improve patient outcome by facilitating evidence-based practice. On the contrary, opponents argue that protocols discourages clinical reasoning resulting in what is called "cookbook medicine" and that protocols are not consistently associated with improved outcome always. However, several studies found that protocol use is associated with improved patient-centered outcomes (Prasad, 2010).

Outcome of adherence to protocols

To have an effective management of obstructed labour, it is important that health professionals adhere to OLMP. Adherence has been defined by Al-ageel and As-Sabhan (2010) as the extent to which health professionals/patient follow the given instruction. In other words, adherence is the degree to which the behaviour of the trial participants corresponds to the intervention assigned to them. Studies which have been conducted on assessing the quality of care rendered to pregnant women with obstructed labour have showed that non-adherence to obstructed labour management protocols was strongly associated with negative labour outcomes.

Adherence to obstructed labour management protocols like timely caesarian helps to prevent major complications that lead to maternal and neonatal deaths (WHO, 2009).

A cohort study was conducted in Ghana by Amoakoh-Coleman et al., (2016). The results showed that adherence to guidelines significantly influenced both neonatal and any maternal complication, for example, in this study, neonatal complications were reduced by almost 30.0% amongst women whose care was standard as per the guidelines while delivery related complication for such women was reduced by about 40.0%.

According to Mondal, Chaudhuri,Kamilya and Santra (2013), early recognition of obstructed labour which is one of the steps of obstructed labour management protocols helps to reduce incidences of maternal and neonatal morbidity and mortality . In addition, Mondal et al.(2013) found that immediate caesarean section or instrumental vaginal delivery such as vacuum extraction and forceps delivery reduces the occurrence of maternal and neonatal morbidity and mortality.

Another cohort study that was conducted in Nepal with the aim of assessing health worker adherence to protocols for fetal heart rate monitoring and partograph use during the intrapartum period and to assess the association between adherence and intrapartum stillbirth. Fetal heart rate monitoring and the use of partograph are some of the steps of the management of obstructed labour. The results of this study showed that the decreased frequency of fetal heart rate monitoring lead to increased risk of intrapartum stillbirth. The study found that fetal heart rate monitoring intervals of more than 30 minutes resulted in a four-fold risk increase for intrapartum stillbirth and the likelihood of intrapartum stillbirth increased seven times if fetal heart rate monitoring was performed less than every hour or not at all. Additionally, there was a

three-fold increased risk of intrapartum stillbirth if the partograph was not used (Ashish, Wrammert ,Clark, Ewald, & Målqvist, 2016). This means that non-adherence to protocols leads to poor neonatal outcome.

Similarly, another related study was conducted in Tanzania at Muhimbili hospital where they audited the care rendered to women with obstructed labour. The study found that perinatal outcomes, neonatal distress and fresh stillbirths, were reduced from 16% to. 8.8% when health workers were implementing obstructed labour management protocols (Mgaya et al., 2016).

In Malawi, related studies have shown that compliance to obstructed labour management protocols helps to reduce case fatality rate and perinatal mortality. A mixed method study was conducted at Ethel Mutharika Maternity wing and Bwaila hopsital with the main objective of assessing the use of partograph and its effects on maternal and neonatal outcome. The results showed that there was a strong association between monitoring fetal heart rate and foetal outcomes ($p<0.01$). The study also found that there was a strong association between monitoring descent and foetal outcomes ($p<0.01$). In addition, the results also showed that the odds of foetal deaths were reduced by 59.6% if fetal heart rate was monitored (Khonje 2012).

Factors that influenced the use of obstructed labour management protocols

It is difficult to induce midwives and clinicians to adopt clinical guidelines (Van Achtenberg, Schoonhoven &Grol, 2008). There is no single factor that fully affects adherence to OLMP. However, studies by some earlier researchers found that supervision, availability of resources (both human and material), training, availability of the protocol and rewarding of outstanding health professionals affect the use of protocols to some extent.

Supervision is essential in ensuring that patient safety is protected in the hospital. Supervision is an integral part of the care and requires the hospital managers to make ongoing assessments of the health workers and the activities in which they are engaged**.** Supervision is very critical in ensuring that services rendered to patients are of good quality. Supervision promotes competence of midwives/clinicians and the application of accepted professional protocols. Therefore, supervision plan or roster assists hospital managers to conduct their role well. Lack of supervision rosters makes management fail to monitor health professional activities which may lead to their poor performance .Supervision is essential because it helps to maintain and improve provider competence and confidence to perform life saving obstetric care. It also monitors performance and ensure safety and quality obstetric care service. Kayiga et al. (2016) study revealed that inadequate supervision of intern doctors, medical students and midwives by their seniors contributes to poor quality of care given to women with obstructed labour.

Similarly, in a study conducted by Francke, Smit, Je de Veer & Mistiaen(2008), it was found that lack of support from peers or seniors influence guidelines implementation negatively. In addition, a study conducted by Khonje (2012) has shown that health workers were not using partograph which is one of the components of obstructed labour management protocols due to inadequate supervision by hospital managers. Another study conducted by Chodzaza (2008) also found that lack of supervision contributes to poor management of obstetric complications including obstructed labour. According to the study conducted by Rankin, Mcguire, Mathews, Russel and Ray (2016) appropriate preparation in this case having the supervision roster is one of the factors that facilitated supervision of hospital managers.

In a study conducted by Kayiga et al. (2016), stock-outs of essential supplies, drugs, equipment and sundries were contributing significantly to poor management of obstructed labour women. In Malawi, a study conducted by Khonje (2012) has shown that health workers were not using partograph which is one of the components of obstructed labour management protocols due to inadequate monitoring resources.

Training of health care workers is very vital in health care settings. Fletcher (2007) said that without continued investment in healthcare professional education, the vision of high quality, guidelines-driven, evidence-based health care will never be accomplished. Another study conducted by Kayiga et al. (2016) in Uganda found that there was overall improvement in practice of health care workers after they were trained on OLMP. Similarly, a study conducted by Ebben et al. (2013) found that the health professionals improved their performance after they were trained.

Performance appraisal is the mediator between what you want to be done and motivating staff to do it (Gesme & Wiseman, 2011). Performance appraisal improves the performance of health workers and also helps the manager to know which health worker requires additional training. Dieleman, Toonen, Touré and Martineau (2006) study done at Bamako, Sikasso and Mopti hospitals in Mali found that one of the main motivators of health workers was performance appraisal. According to the study conducted by Khonje (2012) at Bwaila and Ethel Mutharika maternity wing in Lilongwe District, lack of motivation/recognition in their work performance contributed to health workers non-compliance to protocols.

Similarly, a cross-section study was conducted in 8 public hospitals of West Amhara, North West Ethiopia, in which 305 health workers were recruited. The study was conducted to assess the level of motivation of health workers and associated factors. The results showed that non financial motivators like performance evaluation were one of the strong predictors of health workers motivation (Weldegebriel, Ejigu, Weldegebreal & Woldie, 2016).

Conclusion

The literature under this subject has shown that health care providers greatly influence the outcome of obstructed labour. Therefore, compliance with management of obstructed labour standards and guidelines helps to achieve optimum outcome for the woman and her baby. Hence, it is suggested that effective implementation of care to patients/clients should ensure guidelines adherence in practice and subsequently this will lead to an improved patient outcome. Some factors that may influence use of protocols are supervision, availability of resources, training and performance appraisal.

Some studies employed both qualitative and quantitative method to assess health workers use of protocols and impact while other studies used quantitative method only. Therefore, this study used quantitative research design . Quantitative research design was used to assess midwives and clinicians adherence to obstructed labour management protocols, assess outcome of pregnant women managed for obstructed labour and answer the fourth objective of identifying factors that influence the usage of protocols by midwives and clinicians. In Malawi, studies on adherence to obstructed labour management protocols are few. These credited this study to be conducted.

Analyzing the implementation of obstructed labour management protocols among midwives and clinicians' will help to improve the implementation of guidelines at the health facility.

Chapter Three

Research Methodology

Introduction

This chapter describes the study design, settings, period, the population, sample size and sampling procedures, tools used to collect data. Data collection process, data analysis and ethical clearance have also been described in details.

Type of Research Study

This was a descriptive cross-sectional study. This design is appropriate for describing phenomena at a fixed point (Polit & Beck, 2014). In this study the researcher focused on data which was collected from the 1st of July 2015 to the 30th of June 2016. The researcher only targeted files for women with obstructed labour to assess whether the national obstructed labour management protocols were adhered to or not.

According to Setia (2016), cross-sectional studies are useful for monitoring and evaluation of programs. In addition, Segwick (2014) observed that cross sectional studies are quick, easy and cheap to perform. Therefore Cross-sectional design helped the researcher to evaluate the care that was given to women with obstructed labour with speed, ease and less costs. Sedgwick (2014) further observed that with cross sectional design, it is possible for the researcher to assess more than one outcome. He also mentioned that although cross-sectional studies are good, the problem is that only an association and not causation can be inferred.

Study site

The study was conducted at Thyolo District Hospital. Thyolo District Hospital is located at the centre in the town of Thyolo in the Southern Region of Malawi. The facility serves a population of 611,000 people. The facility has 62 midwives, 30 clinical officers, 3 anesthetists and 2 medical officers. Thyolo District Hospital is a 350- bed facility with the ability to accommodate 8 women in labour and sometimes other women use floor beds and postnatal wards at any one time. On average, 1406 births occur per month at the facility and16, 872 per year. Thyolo District Hospital was chosen as a study site because of high maternal and neonatal mortality rate due to obstructed labour. The facility report revealed that 21% of maternal deaths were due to ruptured uterus which is a complication of obstructed labour and 13% of neonatal deaths were due to birth asphyxia secondary to obstructed labour.

Study Period

The whole study from proposal development to data analysis took one year. The study commenced in October 2016 to October 2017.

Study Population

The study populations were all case files of the women with obstructed labour managed from 1st July 2015 to 30th June 2016.

Study Sample Size

From 1st July 2015 to 30th June 2016, Thyolo District Hospital experienced 737 obstructed labour deliveries out of 16,873 which represent 4.4 % (Safe Motherhood Report, 2015-2016). Lemeshow (1990) recommended the following equation for calculation of sample size in quantitative research;

n = $\frac{z^2\, p(1-p)}{d^2}$

where:

n= sample size

z= is the standard normal deviate set at 1.96 (for 95% confidence level)

P=Estimated population prevalence or proportion of obstructed labour at Thyolo Disttrict Hospital which is 4.4%

d= level of precision (the desired degree of accuracy which is 0.05 for 95% confidence Level)

n = $\frac{1.96^2 0.044(1-0.044)}{0.05^2}$

n = 65

However, basing on the formula above the minimum sample size was supposed to be 65 but the researcher sampled 90 case files in order to increase the level of accuracy. As the sample size increases, the margin error decreases. The more the information you have, the more accurate the results (Rumsey, 2016)

Inclusion Criteria

- All case files of women with the diagnosis of obstructed labour from 1st July 2015 to 30th June 2016.

Exclusion Criteria

- Case files of women with normal deliveries and other obstetric complications such as retained twins, retained placenta, pre-eclampsia / eclampsia from 1st July 2015 to 30th June 2016.

Study Sampling Method

The study used simple random sampling which ensures high degree of representativeness and avoids bias (Polit and Beck, 2014). Firstly, the researcher assigned a number to each case file that met the inclusion criteria. The researcher wrote similar numbers of the case files on separate pieces of paper. These pieces of paper were folded and mixed in the box then the researcher had to pick one piece of paper randomly until all the 90 (ninety) pieces of paper were selected. Then the researcher selected their corresponding files to be reviewed.

Development of Data Collection Instruments

Two instruments were used to collect data. These were audit checklist and checklist for assessing structural factors.

Development of audit checklist

The development of audit checklist was based on the steps of obstructed labour management protocols that were recommended by the Ministry of Health in 2011 as shown in table 1 below

Table 1: Steps of Obstructed labour management protocols

	Steps	Steps
1	Contractions frequency checked and charted every hour	14.C/S conducted within one hour after diagnosis is made
2	Fetal presentations checked and documented every hour	15. Status of incision wound recorded every 15minutes
3	Partograph commenced when cervical dilatation is 4cm or more	16.Status of vagina recorded every 15 minutes
4	Cervical dilatation checked every 4 hours	17.Fluid intake recorded every hour
5	Maternal vital signs checked and recorded hourly	18.Urine output recorded every hour
6	Fetal heart rate and checked and recorded hourly	19. Post-operative antibiotics given for 5 days
7	Action was taken when alert line was reached	20.Vesico-vagina fistula monitored
8	Action was taken when action line was reached	21.Recto-vagina fistula monitored
9	Intravenous infusion inserted	22.Anaemia monitored
10	Blood samples for haemoglobin and grouping and cross matching taken	23. Family planning method was offered when BTL was not done
11	Urinary bladder catheterized	24.Health education given on implication of future pregnancies
12	Pre-operative antibiotics given	25.Advice of elective C/S next time given
13	Preparation for resuscitation of the baby was done	

The checklist was developed to answer the first objective which is assessing performance of midwives and clinicians in line with obstructed labour management protocols. So the researcher was checking whether these steps were followed and implemented in all the ninety obstructed labour case files that were sampled. This enabled the researcher to arrive at the conclusion regarding the performance of midwives and clinicians on the implementation of obstructed labour management protocols.

Development of Checklist for factors that affect use of OLMP.

The checklist for factors that influence the use of obstructed labour management protocols was developed to address the fourth specific objectives which identify factors that influence compliance of midwives and clinicians to obstructed labour management protocols. The development of the checklist was based on the literature sources (Chodzaza, 2008; Khonje 2012; Kongnyuy, Mlava&Broek, 2009) which identified several factors that influence nurses and clinicians to follow and implement required protocols. These factors include supervision, human and material resources, refresher training and performance appraisal policy and working conditions. So the researcher checked whether these factors really influenced the midwives and clinician to follow and implement OLMPs so as to come up with conclusion.

Validity.

Validity is a measure of whether a data collection tool measures what it is supposed to (Cresswell, 2008). Content validity seeks to answer the question of whether the checklists covers all relevant items needed to answer the research objectives (Bolarinwa, 2015). In this study, content validity was achieved by review of the checklists by experts in Health field which included my supervisor in order to establish whether questions were accurate enough to obtain the desired outcomes. Experts reviewed the tools for clarity, formatting, acceptable response options and wording.

Similarly, the audit checklist was developed following the steps of management of obstructed labour as outlined by the MOH 2011 protocols recommended by WHO. During the development of MOH protocols detailed review of the protocols were done by Health Experts, thus assuring content validity.

Reliability.

In order to ensure that the tools used in this study were reliable, the investigator developed the tools using ideas from similar studies. The researcher used ideas on how earlier researchers developed their tools such as Chodzaza (2010) and Khonje (2012). Polit & Beck (2014) describes reliability as the extent to which a tool provides the same measurements on different occasions and overtime. The checklists have been tested and are reliable (MOH Reproductive Health Guidelines, 2011). Pretesting of checklist also helped to establish its reliability.

Ethical Considerations

Ethics is a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal and social obligation to the study participants (Polit and Beck, 2014). This study strictly followed ethical principles of research which include privacy, anonymity, confidentiality and legal justice.

Anonymity, privacy and confidentiality.

Confidentiality means keeping information which has been shared to you by someone secretly or privately (Cresswell, 2008). In this study, anonymity of health care providers and patients was of utmost important. Several measures were taken to ensure confidentiality of the collected information. Firstly, ward clerks who were assisting in retrieving obstructed labour case files and the researcher signed a confidentiality agreement form (Appendix 1) with the hospital management that they will never contact individual patients or health care providers regarding the care that was given previously. This was done to maintain the secrecy of the information. During data collection, records were never left unattended and they were kept in a locked room. Every obstructed labour case file was assigned a unique study number so that patients' identity was not be revealed.

Legal justice.

Legal justice means respect for morally acceptable laws. In this study, legal justice was achieved by submitting the research proposal for review at College of Medicine Research and Ethics Committee (COMREC) for approval before data collection was initiated (Appendix 4). Permission to conduct study at Thyolo District Hospital was obtained from the District Health Officer Thyolo District Hospital (Appendix 3).

Data Collection Process

Review of obstructed labour case files.

Firstly, the researcher worked with ward clerks to retrieve files of patients. The researcher actually compared what was done against the 25 criteria on the checklist adapted from the MOH 2011 guidelines on the management of obstructed labour (Appendix 2, section B). A score of 1 (Yes) was awarded if the criteria were adhered to and a score of 2 (No) was awarded if the criterion was not adhered to.

Availability of resources, supervision tools and performance appraisal policy.

Another checklist was used to assess availability of resources, management ward supervision tool and performance appraisal at the hospital during the study period (Appendix 2, section D). The researcher checked with the Hospital Management including heads of department (maternity, labour ward, pharmacy and human resources) whether the hospital had enough resources, supervision, performance appraisal policies, training schedules, duty rosters and staff returns. Then the researcher compared the findings against the checklist. A score of one was awarded if the item assessed was available and a score of 2 was awarded if the item was not available.

Pre-testing

The checklists were pre-tested at Thyolo District Hospital one week prior to data collection. Thyolo hospital was chosen for convenience because the researcher had limited time to conduct the study. According to Connelly (2008), a pilot study sample should be 10% of the sample projected for the larger parent study. Therefore, nine case files were audited .Pre-testing was done to ensure that all the important aspects on the checklist had been covered. It also helped to identify problems associated with the checklists.

Data Management

All case files for the selected study period were retrieved by the hospital data clerk. The researcher then separately reviewed every case file and choose only those that met the inclusion criteria. Simple random sampling was done and then the researcher filled the checklist. The filled checklist forms were checked for completeness, consistency and then cleaned .Creation of database and data entry was done in SPSS by the Research Assistant. The data also were coded numerically to ensure that analysis was carried out effectively. Once the entry was completed, the data were analyzed using Statistical Package for Social Sciences (SPSS) software version 16.0. The filled checklists were stored in locked filing cabinets whereas the electronic data were stored in the researchers' computer and external drive backup which were password protected and accessed by the researcher alone.

Data Analysis

Data analysis is "an integrated part of the research design", and it is a means of making sense of data before presenting them in an understandable manner (Cecil, Thompson, &Parahoo, 2006). All data was analyzed using SPSS version 16.0. Descriptive analysis was carried out on the data collected. The frequency of a particular

response to a question was calculated as a percentage and the data were illustrated using tables, bar and pie charts. The researcher checked on the format and relevance of the charts and tables produced by computer analysis.

To check on possible connections between variables, Pearson correlation coefficient was used (Cecil et al., 2006). Correlations were checked between independent variables (age, number of pregnancies, Education, Height) and the dependent variables (neonatal complications, maternal complications). Correlations were checked between one independent variable and two dependent variables, for example, correlation was checked between age versus maternal and neonatal complications. Correlation coefficients were calculated to check the intensity and direction of the correlations. The values of these coefficients could range from + 1.00 for a positive relationship through 0.00 to − 1.00 for a negative relationship (Rumsey, 2016).

Measuring Adherence

Several studies have measured adherence using a scoring system, based on available guidelines or protocol requirements. In this study adherence was measured basing on the 25 National Reproductive Health guidelines for Malawi shown in table 1 above which must be followed when managing obstructed labour cases. Every case file reviewed was assessed to see how many of the 25 variables were actually adhered to by midwives and clinicians when managing women with obstructed labour. The file that scores less than 80% is regarded as non adherence . Intervention studies have found that there is reduction in complications as the adherence approaches 100% (Kalia, 2014). Similarly, in Malawi, according to the Standard – Based Management and Recognition approach to quality improvement in maternal, newborn and

child health care, a score of 80% and above is the recommended standard (Necochea et al,2015). The adherence rate for the Thyolo hospital was calculated by finding the number of criteria adhered divided by the total number of criteria assessed (25) multiplied by 100.

Results Presentation

Data collected from the checklists were presented using tables, pie and bar charts. Tables facilitate presentation of large amounts of data and bar charts give a clear picture of results with a sense of proportion (Cecil et al., 2006).

Chapter Four

Presentation of study Results

Introduction

This chapter presents study findings based on the study specific objectives which include assessing performance of midwives and clinicians' in line with obstructed labour management protocols, assessing the outcome of the pregnant women managed for obstructed labour and identifying factors that influence adherence of midwives and clinicians to obstructed labour management protocols.

Demographic characteristics of women with obstructed labour

Table 2 shows that the age of women with obstructed labour was ranging from the minimum of 15 years to the maximum of 38years. Nearly half of the women 44.4 %(n =40) were in the age group of 15-19 years. Table 2 further shows the gravidity of the women .More than 2/3 of the women 68.9% (n=62) were primgravida. The table also shows that more than half of women 56.7 %(n=51) were primary school leavers and 85.6 %(n=77) of the women were not employed. The majority of the women (74.4%, n =67) were married.

Table 2: Percentage Distribution of obstructed labour women by background characteristics

Characteristics	Frequency (n)	%	Characteristics	Frequency (n)	%	Characteristics	Frequency (n)	%
Age			**Marital status**			**Education level**		
15-19 years	40	44.4	Married	67	74.4	Primary	51	56.7
20-25 years	34	37.8	Single	14	15.6	Secondary	27	30.0
25-30 years	6	6.7	Unknown	9	10.0	Tertiary	1	1.1
30-35 years	6	6.7	**Religion**			unknown	11	12.2
above 35 years	4	4.4	Catholic	13	14.4	**Occupation**		
Gravidity			CCAP	7	7.8	Employed	2	2.2
Gravida one	62	68.9	Muslim	4	4.4	Not employed	77	85.6
Gravida two	12	13.3	SDA	12	13.3	Business	11	12.2
Gravida three	8	8.9	Pentecost	48	53.3			
Gravida4&above	8	8.9	Unknown	6	6.7			

Height of women with obstructed labour

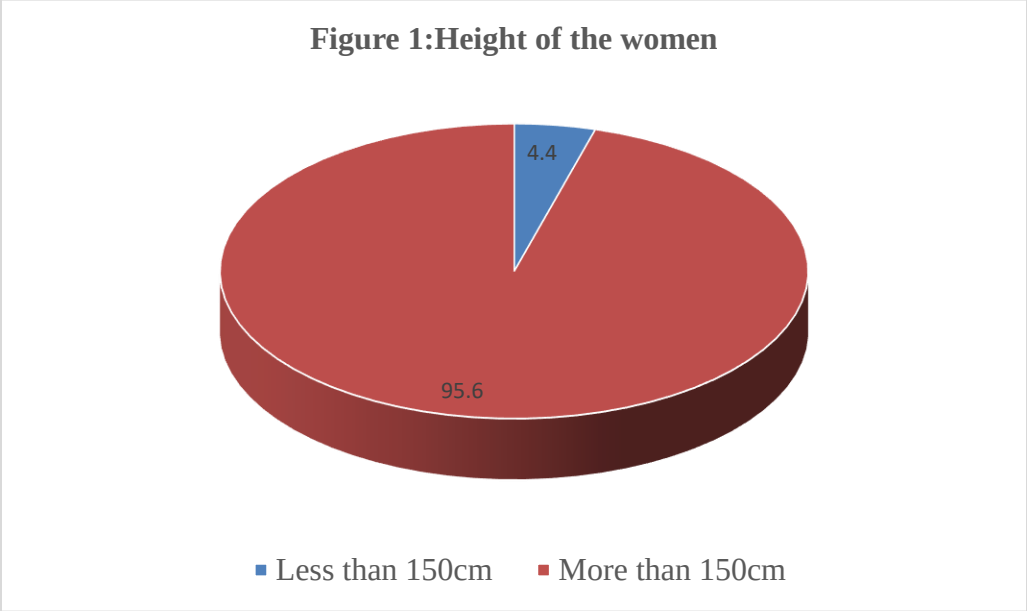


Figure 1 above shows that majority of women (95.6%, n=86) who suffered obstructed labour had a height of 150cms or more.

Midwives and clinicians adherence to OLMP

The researcher reviewed 90 obstructed labour files to assess whether health workers adhered to OLMP as required for the better management of obstructed labour. To check the adherence, the researcher assessed 25criteria's contained in the OLMP whether they were implemented in all the 90 files or not.

The study results in table 3 below shows that only 24 % (n=6) criteria were implemented in more than 80% of case files analyzed. These were: commencing intravenous fluids, administer antibiotics post-operatively and clinical monitoring of anaemia , commencing partograph when cervical dilatation is 4cm or more, taking action when action line is reached and inserting urinary catheter.

While the other 44% (n=11) criteria's were inconsistently implemented .These were: taking action if alert line are crossed, checking and charting frequency of contractions, checking fetal presentation, checking fetal heart rate, conducting caesarean section within one hour of diagnosis of obstructed labour , checking maternal vital signs, preparing for resuscitation, checking cervical dilatation every 4 hours, taking blood sample for grouping and cross-matching and administration of pre-operative antibiotic and recording status of the vagina.

The table 3 also shows that the remaining 32%(n=8) of the criteria's were completely not implemented in all the 90 files, these include: recording hourly fluid Intake, recording hourly urine output, monitoring surgical incision, monitoring and record evidence of vesico-vaginal fistula, monitor and record evidence of recto-vaginal fistula, offer family planning if BTL was not done, health education on the possible impact of obstructed labour on future pregnancies and advice on elective CS in future pregnancies.

Table 3: Proportion of records showing adherence to OLMP

Criteria/step	Adherence		Criteria/step	Adherence	
	Files,n	(%)		Files,n	(%)
			Caesarean section <1 hour of diagnosis	17	(18.9%)
Insert intravenous infusion line	88	(97.8%)	Document maternal vital signs q hour	9	(10.0%)
Administer antibiotics	89	(98.9%)	Prepare for newborn resuscitation	1	(1.1%)
Monitor clinical signs of anaemia	89	(98.9%)	Record fluid intake q hour	0	(0.0%)
Partograph for cervical dilatation ≥4cm	89	(98.9%)	Record urine output q hour	0	(0.0%)
Insert urinary catheter	89	(98.9%)	Check status of incision q 15 minutes	0	(0.0%)
Take action if line was reached	78	(86.7%)	Record status of vagina q 15 minutes	1	(1.1%)
Check &record cervical dilatation q 4 hours	62	(68.9%)			
Blood for hemoglobin, group &cross-match	50	(55.6%)	Offer family planning if BTL was not done	0	(0.0%)
Administer Chloramphenicol 1g IV pre-op	48	(53.3%)	Monitor & record evidence of vesico-vaginal fistula	0	(0.0%)
Take action if alert line was crossed	44	(48.9%)	Monitor and record evidence of recto-vagina fistula	0	(0.0%)
Check &chart contraction frequency q hour	27	(30.0%)			
Document fetal presentation q hour	22	(24.4%)	Health education to the couple on future pregnancies	0	(0.0%)
Record fetal heart rate q 30 minutes	22	(24.4%)	Giving advice on elective CS in future pregnancies	0	(0.0%)

Time taken to perform caesarean section (CS)

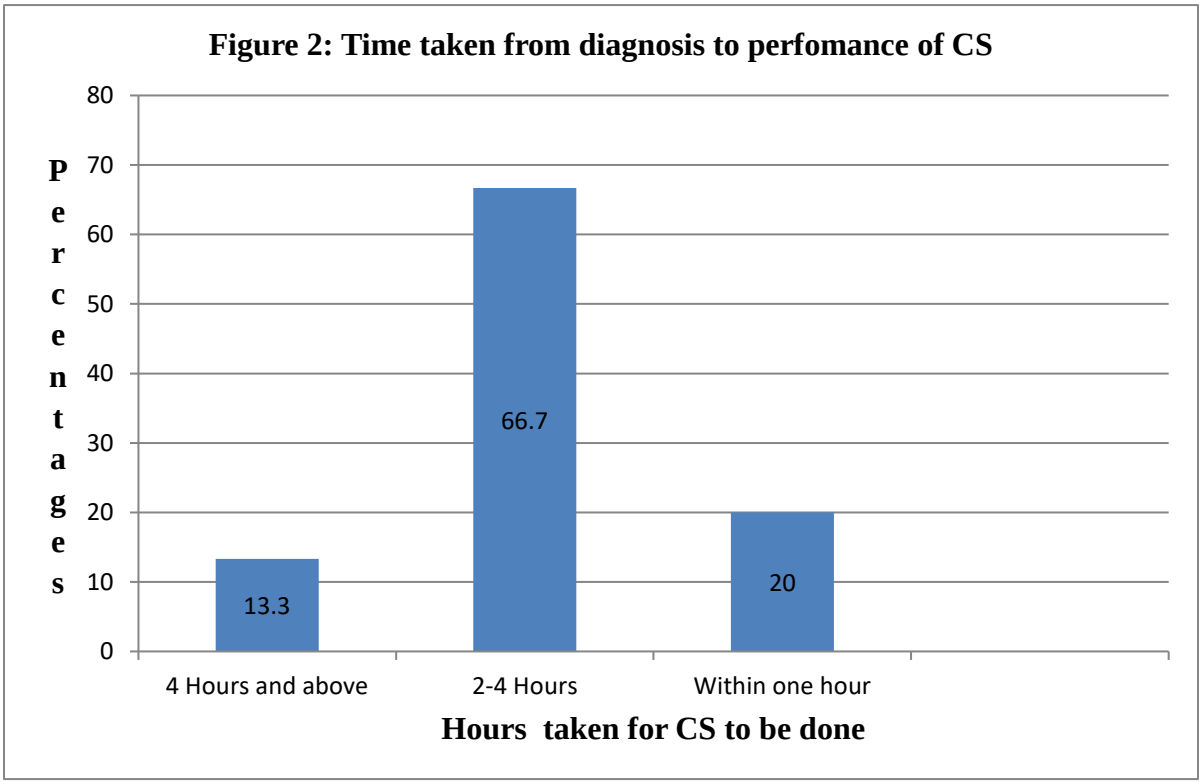


Figure 2 showed that only 20% (n=18) of the cases, CS was conducted within the recommended time of within one hour of diagnosis. The rest of the cases 80% (n=72), CS was conducted after one hour .The mean time of performance of CS in all the 90 cases was 2 hours 20 minutes. This means that there was delay in performance of CS at Thyolo Hospital.

Overall adherence to obstructed labour protocols

To assess the overall adherence rate, the researcher calculated the number of criteria adhered divided by the total number of criteria assessed multiplied by 100

The number of criteria adhered=6

The total number of criteria assessed=25

6/25×100=24%

From these calculations the researcher concluded that the overall adherence rate was 24%.

Neonatal outcome of the 90 cases of obstructed labour

Table 4 below shows that all the 90 cases of obstructed labour women delivered their babies through caesarean section.

Table 4:Mode of delivery		
Mode of delivery	**Frequency**	**percentage**
Vacuum extraction	0	0%
Caesarean section	90	100%

Table 5 below shows that 2 %(n=2) of the babies born from the 90 cases of women with obstructed labour were still births.

Table 5: Fetal condition during births		
Parameter	**Frequency**	**percentage**
Live births	88	98%
Still births	2	2%

Neonatal Complication

Figure 3: proportion of babies with Asphyxia

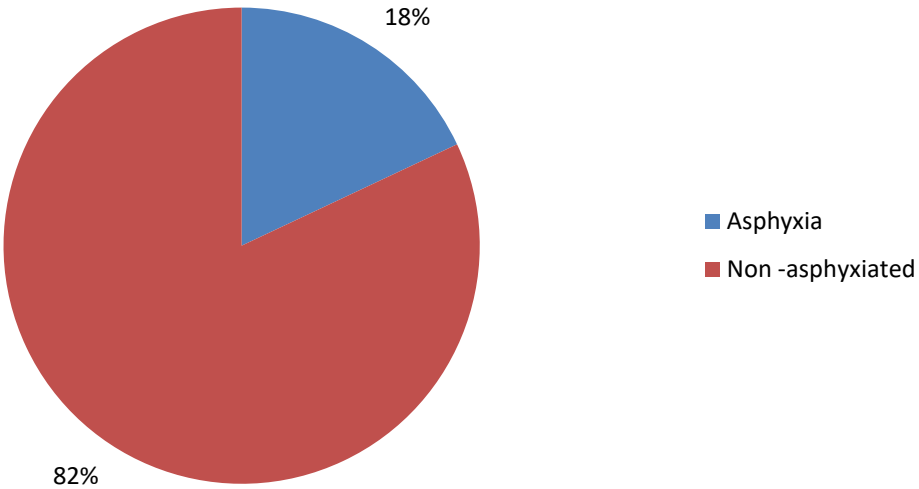


Figure 3 above shows that among the 88 babies that were born alive,18% (n=16)of the babies born suffered asphyxiation, with Appearance ,Pulse, Grimace ,Activity and Respirations (APGAR) scores at 5 minutes ranging from 2/10 to 6/10.

Maternal outcome of obstructed labour cases

The study found that all the 90 obstructed labour women were alive. The study also found that 3.3% (n=3) of obstructed labour women developed wound infection and 2.2 % (n=2) had post partum haemorrhage within the first seven days of post caesarean period (Table 6).

Table 6:Distribution of maternal complication among obstructed labour deliveries(n=90)

Maternal complication	Frequency	Percentage
Post partum haemorrhage	3	3.3%
Wound infections	2	2.2%

No Complication	85	94.4%

Association between maternal demographic characteristics and outcome of the obstructed labour women

The researcher did correlation tests to assess whether demographic characteristics could affect the outcome of the labour cases reviewed. Her main focus was on maternal age, gravidity, education and height of the obstructed labour women. However, early researchers established that any correlation coefficient (positive or negative) which is less than 0.3 is regarded as negligible correlation which means one variable cannot affect the other variable while the correlation coefficient of 0.3 and above indicates strong relationship (positive or negative) between two variables which means one variable can affect the other (Cecil et al., 2006).

Age versus neonatal and maternal complications

The researcher assessed whether maternal age affected neonatal and maternal complications(table 7). In this study, the researcher found that the correlation between age and neonatal complications was -0 .198 while the correlation between age and maternal complications was -0.131, which means there was no significant relationship between maternal age and neonatal complications, or maternal age and maternal complication.

Table 7: Paired correlation between age and neonatal/maternal complications

Variables	**N**	**Correlations**	**Sig.**
Age and neonatal complications	90	-.198	.061
Age and maternal complications	90	-.131	.217

Gravidity versus neonatal and maternal complication

The researcher further assessed the relationship between gravidity and neonatal complications. Table 8 below shows that the correlation coefficient between gravidity and neonatal complications was -0.201 while the correlation coefficient of gravidity and maternal complications was -0.124, which means the number of pregnancies that obstructed women had, did not contribute towards the neonatal and maternal complications. In other words, this study found that there was no relationship between number of pregnancies that the women had versus neonatal and maternal complications.

Table 8: Paired correlation between gravidity and neonatal/maternal complications

Variables	**N**	**Correlations**	**Sig.**
Gravidity and neonatal complication	90	-.201	.058
Gravidity and maternal complications	90	-.124	.243

Education versus neonatal and maternal complications

The researcher further assessed whether education affected neonatal and maternal complications. The table 9 below shows that the correlation coefficient of education and neonatal complication was 0.019 while the correlation coefficient of education and maternal

complications was -0.179. Here it means the level of education of the obstructed labour women did not significantly contribute towards the cause of neonatal and maternal complications.

Table 9: Paired correlation of education and neonatal/maternal complication

Variables	**N**	**Correlation**	**Sig.**
Education and neonatal complication	90	.019	.862
Education and maternal complication	90	-.179	.092

Height of the woman versus neonatal and maternal complication

Finally, the researcher assessed whether height affects the neonatal and maternal complications. This study (table 10) found that the correlation coefficient of height and neonatal complication was 0.052 while the correlation coefficient of height and maternal complications was (-.037), which means height had no significant impacts on the cause of neonate and maternal complications in this study.

Table 10: Paired correlation of height and neonatal/maternal complications

Variables	**N**	**Correlation**	**Sig.**
Height and neonatal complications	90	.052	.627
Height and	90	-.037	.729

maternal complications			

Factors that influence the use of OLMP in this study

Essential drugs and supplies

The researcher checked the requisitions and issue vouchers of pharmacy and found that the drugs and supplies which are needed for management of obstructed labour were available in pharmacy and the wards during the study period. These drugs include:(1) benzyl penicillin,(2) gentamycin,(3) chloramphenicol, (4) catheters, (5) catheter bags, (6) normal saline, (7) Ringers lactate, (8) blood bags, (9) syringes and (10)Blood grouping reagents.

Essentials Equipment

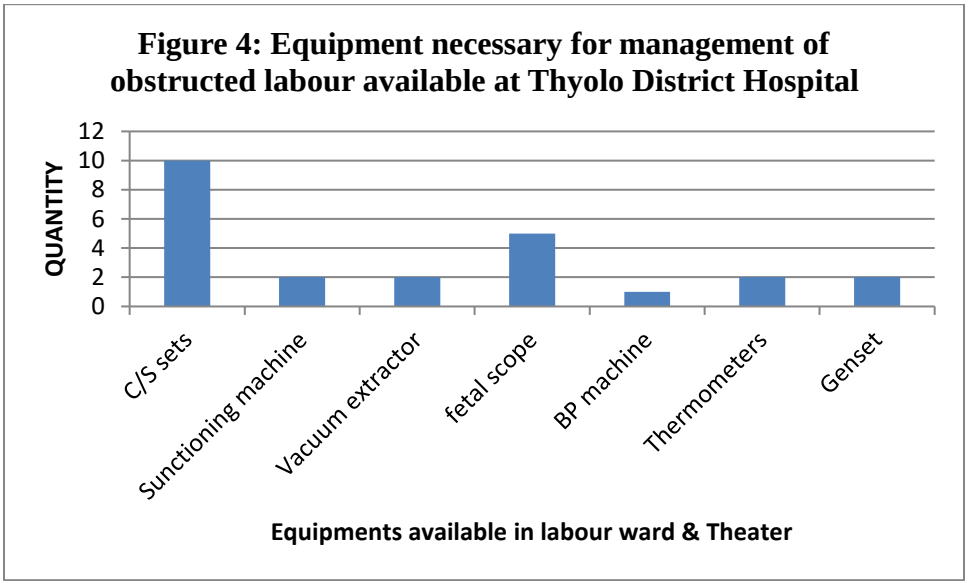


Figure 4 shows the number of equipment available which includes; 10 caesarean operating sets, 2 suctioning machine and 2 generators. The functionality of C/S sets and

generators depend on the functionality of autoclave and availability of fuel respectively which been reported in 11% (n=10) of case files reviewed as a problem.

The researcher further observed that the hospital had a labour ward with 8 beds which means the ward can accommodates a maximum of 8 labouring women. The ward also had 5 fetal scopes, 2 vaccum extractors, 2 thermometers and 1 blood pressure machines. Thermometers and blood pressure machines were not adequate against 47 deliveries per day. Generally the equipment necessary for the management of obstructed labour were available but not adequate.

Health personnel

In this study, the researcher assessed whether Thyolo District Hospital has enough health professionals as required by District hospital standards in Malawi .Table 11 below shows that health professionals required for management of obstructed labour were not adequate with a vacancy of 123 health providers.

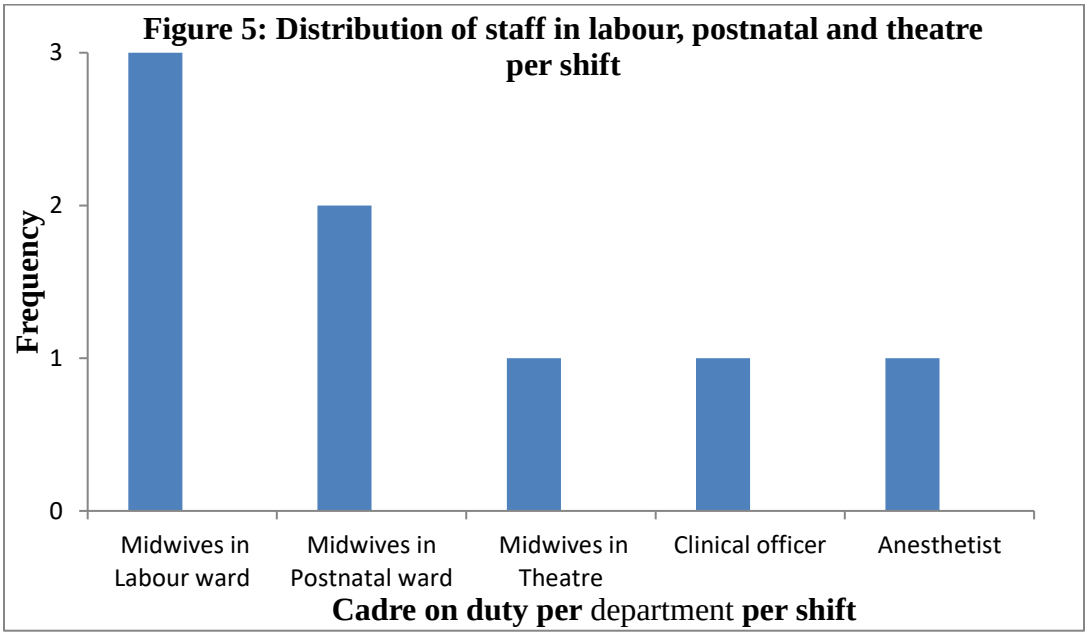
Table 11: Availability of health Professionals at Thyolo Hospital

Health professionals	Available	Recommended
Nurse Midwife Technicians	40	107
Registered Nurse Midwives	22	22
Clinical Officers	30	71
Medical Assistants	12	16
Medical Doctors	2	10
Anesthetists	3	6

Source: Thyolo Hospital staff establishment 2016

Thyolo Hospital staff returns 2016

Allocation of staff in labour, postnatal and theatre



The researcher checked duty rosters for midwives, clinical officers and anesthetist .Figure 5 above shows that the health workers distribution per one shift in the postnatal, labour and theater wards. The researcher found that critical staff members for the management of obstructed labour were allocated for day and night shifts in their various departments but allocation of 3 midwives in labour ward,2 midwives in postnatal ward,1 midwife in theater and 1 clinical officer per shift was not adequate against 47 deliveries per day. In addition, the 3% (n=3) of the files reviewed documented that clinical officers and anesthetists were not available, though on shift, especially at night.

Supervision

In this study, the researcher checked with senior personnel for the presence of the ward supervision roster and individual performance –based checklist.

However, neither of the Hospital Matron, District Nursing Officer, District Medical Officer, nor the District Health Officer did possess a copy of the ward supervision roster as shown in the Table 12 below.

Table 12: Possession of ward supervision roster by Hospital managers

Manager	Ward supervision roster present	
	Yes	NO
Hospital Matron		✓
District Nursing Officer		✓
District Medical Officer		✓
District Health Officer		✓

Finally, the researcher checked for a performance appraisal policy, which is used for evaluation of health workers performance and the rewarding systems, unfortunately the facility did not have them.

Availability of protocols

The study found that obstructed labour management protocols were physically available in the wards. They were pasted on the walls of labour and postnatal wards.

Summary

The study findings show that 44.4% (n=40) of obstructed labour women were between 15-19 years old and 68 .9% (n=62) were primgravidas. The findings further revealed that 56.7% of women had primary school as their highest education level . The study results also revealed that there was 24% adherence rate to obstructed labour management protocols at Thyolo District

Hospital. Factors that contributed to low adherence rate were inadequate staff especially NMT, in adequate resources, lack of supervision and performance appraisal.

Chapter Five

Discussion of study Results

Introduction

This chapter presents a discussion of the study results. In order to achieve the purpose, the researcher discusses only relevant findings obtained on outcomes of adherence and factors that influence adherence of OLMP. The researcher will firstly present the relevant finding and reasons will be given on why the situation is like that and finally, the researcher will then compare the results with other studies done by different researchers on the same issue.

Adherence to obstructed labour protocols

Key findings of this study were that midwives' and clinicians' adherence to obstructed labour management protocols was low (24%) which is below the recommended standard of 80%. Out of 25 steps of obstructed labour management, only six steps scored over 80%. These steps include: inserting intravenous infusion line, administering antibiotics, monitoring clinical signs of anaemia, commencing partograph when cervical dilatation is 4cm or more, inserting urinary catheter and taking action if line was reached. This means that the care rendered to women with obstructed labour was of low quality. Non-compliance to stipulated protocols may lead to adverse labour outcomes like births asphyxia and maternal complications like sepsis and postpartum haemorrhage. In Malawi, earlier studies have also identified gaps in the quality of care rendered to obstetric women (Chodzaza, 2010; Kalata, Kamange, & Muula,2013; Khonje ,2012) which could be due to low adherence to protocols and subsequently suboptimal quality

of care to laboring women. The study results are in agreement with the study conducted by Kayiga et al. (2016) in Uganda which found that health workers adherence to obstructed labour management protocols was low from 4.2% at baseline assessment to 9.2% at re-audit. The study results are similar because the study setting is similar both (Mulago and Thyolo hospital) being free government hospitals and the method of assessment was also similar both using criteria-based audit.

The study also found that the most crucial steps of obstructed labour management were not adhered to such as conducting timely caesarean sections. Caesarean section is an essential treatment for obstructed labour (WHO, 2009). Non-compliance to timely caesarean sections may lead to poor neonatal outcomes like births asphyxia and fresh still births, for example, case files analyzed revealed that 18% (n=16) of the babies born suffered asphyxiation, with APGAR scores at 5 minutes ranging from 2/10 to 6/10. APGAR score of less than 7 at 5 minutes post delivery are predictive of poor neonatal outcomes such as neonatal deaths and neurologic disability (Ehrensten,2009). In this study, if timely caesarean sections were done, prolonged labour might have been avoided thereby reducing possibility for birth asphyxia. In Malawi, delay in rendering essential treatment to laboring women has been identified as one of the contributing factors to obstetric complications (Mgawadere,Unkels, Kazembe & Broek,2016).

The study results are similar to the study conducted by Kayiga et al.(2016) in Uganda which found that time taken to conduct caesarean section was still more, from 120 minutes at baseline assessment to 90 minutes at re-audit. The study results are similar because the study setting is similar both (Mulago and Thyolo hospital) being free government hospitals and the assessment of adherence was also similar both using criteria-based audit. Timely caesarean section (CS) which means conducting the procedure within one hour of diagnosis of obstructed

labour is very critical in the management of women with obstructed labour because it helps to reduce maternal and neonatal morbidity and mortality and obstetric fistula (Wall 2012).

Outcome of women managed for obstructed labour

This study found that non-compliance to obstructed labour management protocols contributed to over performance of caesarean sections, asphyxiated babies, fresh still births and wound infections. The study found that all the 90 obstructed labour women were delivered through caesarean section. This could be due to the fact that protocols were not properly adhered to. Caesarean section was observed to be the common mode of delivery because of mismanaged pregnancy which were allowed to proceed to prolonged labour resulting in obstruction which necessitating operative management. The study results are line with the study conducted by Bakker et al.(2016) at St Lukes Hopsital in Malosa, Zomba which found that there was a high caesarean rate of 19% which was much higher than WHO recommendation of 5-10% caesarean rate and one of the contributing factors was non-compliance to management protocols. The study results are similar because both researchers used retrospective case file review. In Malawi, the rate of caesarean section has risen slightly from 3% between 1992-2000 to 5% in 2010 and 6% in 2015-2016 (DHS, 2016).The inconsistent use of evidence based protocols might lead to unnecessary caesarean section.

The study also found that adherence to checking of fetal heart rate every 30 minutes was low which could contribute to births asphyxia and fresh stillbirths. Only 22 out of the 90 cases analyzed fetal heart rates werechecked according to standards. Fetal heart rate monitoring is very important because it assist the midwife or clinician to identify fetal distress which may be a reason to consider early delivery. Therefore, non-adherence to fetal heart monitoring might lead to missed fetal distress resulting in delayed deliveries hence some babies having births asphyxia

with APGAR score of less than 7 at 5 minutes post delivery and fresh stillbirths. APGAR score of less than 7 at 5 minutes are predictive of poor neonatal outcomes such as neonatal deaths and neurologic disability (Ehrensten, 2009). The study results are in agreement with the study conducted by Mandiwa and Zamawe (2017) which found that foetal heart rate was not recorded in 14% of the partograph and foetal heart rate was partially documented in 54.7% of the partograph at Thyolo and Chiradzulu District Hospitals which resulted in neonatal morbidity and mortality. The results are similar because the study setting characteristics are the same which included Thyolo Hospital and also both researchers used descriptive cross-section design which involved retrospective review of patient records.

The study also found that adherence to the administration of pre-operative antibiotics was low which could also lead to wound infection in some women. Pre-caesarean antibiotics were given to 48 cases out of 90 cases analyzed which means 58% of the women were given pre-operative antibiotics. The use of pre-incision antibiotics is very vital in surgery because it is associated with 50% reduction in overall infection rate (Sullivan et al., 2007). Therefore, non-compliance to the administration of pre-operative antibiotics might lead to wound infection in some women as presented on table 6. The study results are contrary to the study done by Mwale, Maluwa,Malata and Odland (2014) at Bwaila maternity wing in Lilongwe which found that midwives adherence to preoperative administration of antibiotics was 82.1%. The results are different because the study settings might have different problems in terms of resources and individual health care provider perception toward the administration of pre-operative antibiotics.

Reasons for non-adherence to obstructed labour management protocols

This study found that inadequate health professionals, inadequate supervision, inadequate material resources and lack of performance appraisal might have contributed towards the midwives and

clinicians' non-adherence to obstructed labour management protocols. In this study, the researcher has found that there was inadequate supervision of health workers at Thyolo District hospital evidenced by lack of ward supervision rosters and health workers performance checklist. This implies that the protocols were bound to be unutilized. This is in line with the study conducted by Kayiga et al. (2016) in Mulago hospital in Uganda which found that poor supervision is one of the facility factors that contribute to health workers non-compliance to obstructed labour protocols. The study results are similar because the study setting is similar both (Mulago and Thyolo hospital) being free government hospitals and the assessment of adherence was also similar both using criteria-based audit. In Malawi, most managers just do inspection and control because there are no set standards on how the managers should carry out the supervision task. The District Health Management Team also has several roles to play which might contribute to inadequate regular supervision (Bradley et al., 2013).

In addition ,this study has found that Thyolo District hospital has inadequate health care providers especially Nurse Midwives Technicians (NMT's) and clinical officers which might significantly contributed to non-compliance to obstructed labour management protocols. When midwives and clinicians are not adequate, there is increased workload which leads to failure of midwives and clinicians to provide maximum health care service to laboring women due to tiredness hence shortcuts follow which might lead to non-adherence to protocols. The study results are in agreement with studies conducted by earlier researcher which found that inadequate staffing was contributing significantly to poor management of obstructed labour women (Kayiga et al., 2016; Chodzaza, 2008; Kalata et al.,2013) . The results are similar because the study setting is

almost the same both conducted in free government hospitals and adherence was assessed using criteria–based audit. Besides that, the study design is the same both using cross-section. In Malawi, there is an overall shortage of midwives and clinical officers coupled with poor working conditions but mid-level providers are critical in provision of midwifery care because they are highly used to address human resource challenge. Therefore, the inadequacy of these mid-level providers adversely affects the provision of high quality maternity care for women.

Similarly, the study also found that there was high midwife-patient ratio of 1 to 2.7 at Thyolo hospital labour ward. There were 22 deliveries against 3 midwives and one clinical officer per shift. In addition, one midwife would be allocated to 2 or 3 delivery beds and sometimes all these women demand the help of one midwife at once. Therefore, in this case, the midwife will not carry out all the required observations which might lead to non-adherence to protocols. Nurse/midwife-patient ratio is stipulated according to country and setting where nursing and midwifery care is to be offered. In Malawi, the standard nurse/midwife-patient ratio is not yet established. In developed countries, the recommended patient-midwife ratio is 1 to1.4 when a woman is in established labour (Sandal et al., 2011). According to the International council for nurses (ICN), the recommended nurse/midwife-patient ratio is 1 to 6 for average sick patients and 1 to 1 in critical care setting like delivery suite. This implies that the allocation of midwives in labour ward at Thyolo hospital was far below the ICN recommendations. The three midwives allocated per shift are expected to take care of 8 women in labour and sometimes floor beds .The

high midwife-patient ratio might leads to failure of midwives to provide quality health care service to laboring women due to stress of work which might lead to non-adherence to protocols.

This study also established that basic equipments necessary for the management of patients with obstructed labour like blood pressure machines and thermometers were not adequate at the hospital during the study period which might contributed to non-adherence to protocols. Lack of essential equipments and other consumable hinders the midwives from proper monitoring of laboring women .Inadequate blood pressure machines and thermometers explains the findings on table 3 on checking of maternal vital signs which scored 10%. The study results are in agreement with the study conducted by Chikuse et al. (2012) at Queen Elizabeth Central Hospital in Blantyre, Malawi which found that shortage of equipment contributed to midwives non-adherence to resuscitation guidelines. The study results are similar because both researchers utilized descriptive cross-sectional study and there was quantitative data collection and analysis. In Malawi, there is wide-spread lack of essential equipment in the hospitals (Wild & Cammack, 2013. Therefore, inadequacy of monitoring equipments might contribute to health workers inconsistent monitoring of vital signs.

On top of that, this study also found that health workers were not appraised at Thyolo District hospital. This has been evidenced by lack of health workers performance evaluation tools and rewarding mechanism by hospital managers which may lead to midwives and clinicians not adhering to protocols. Lack of performance appraisal make health workers to have low motivation and not committed to work hence non-adherence to OLMP. High-performing health workers were demoralized by feeling that their work goes unnoticed or by seeing lower performers receive the same treatment that they receive. This is in agreement with a study done by Khonje (2012) which found that lack of motivation contributes to incomplete adherence to

protocols. Similarly, another study conducted by Bradley and McAuliffe (2009) found that lack of performance related rewards leads to staff demotivation. The study results are similar because the study country is the same. In Malawi, implementation of the performance management policy which was introduced in 2008 in the civil service has been held back by a number of factors and one of them is absence of rewards and sanctions. Individuals who have done extremely well in their work are not recognized and rewarded. Similarly, for individuals who are not doing well, no any disciplinary measure are taken against (Chidwala, 2013). By the end of a given period, health workers are supposed to be appraised. Those who have done well are supposed to be rewarded accordingly. This acts as a motivation. This will make those who have failed to work hard so that next time they should do well too.

On the contrary, the study found that obstructed labour management protocols were available at Thyolo hospital labour and postnatal ward but midwives and clinicians did not use them. Availability of protocols influences its use**.** A study conducted by Asibong et al. (2014) in Nigeria also showed that there was a significant relationship between availability of protocols and its utilization. This means that the protocols were supposed to be utilized but on the contrary, the health workers did not adhere to protocol. This means that there were other reasons which affected the utilization of obstructed labour management protocols at Thyolo hospital. So what it means is that although the OLMP were present but the protocols were not implemented which affected the quality of care rendered to obstructed labour women. The results are similar to a study conducted by Chodzaza (2010) which found that health workers at Mwanza Hospital did not use guidelines despite being available. The results are similar because both studies used cross–section design and there was retrospective review of patients' records.

Strengths and Limitation of the study

Adherence to obstructed labour management protocols was retrospectively scored from case records. It is therefore not possible that midwives' and clinicians' practice changed because of the study, thus reflecting everyday practice of adherence to OLMP. Similarly, the study was conducted in the researchers' familiar environment that made it easy to access information.

The first limitation is that the study was retrospective and there was secondary data collection which leads to lack of some data due to inappropriate and non-recording of certain variables. In additional, because data were collected retrospectively, midwives and clinicians' perception towards obstructed labour management protocols was not assessed. Therefore, prospective review of case files could have been the best. However, the results of this study are still valid that midwives' and clinicians' adherence to protocols is low due to inadequate human and material resource, lack of supervision and performance appraisals.

The second limitation is that the study is confined to Thyolo District hospital labour and postnatal wards. Therefore the results may not be generalized to other district hospitals in Malawi.

Recommendations

Clinical Practice

Hospital managers at Thyolo district hospital should be re-oriented on supervision through continued professional development because it is only a knowledgeable supervisor who can inform nurse-midwives/clinicians' on what to do and when to do, support and strengthen the juniors and enhance quality of care. Thyolo district hospital management team should arrange for continued professional development (CPD) sessions on obstructed labour management protocols for health workers working in maternity department. This will help the health workers retain key

learning points on the management of obstructed labour. In addition, CPD follow-up sessions should be done by the facilitators. Reflection is very important to cement the knowledge the CPD attendees were taught and identity gaps in the CPD sessions.

The management of Thyolo `district hospital should consider implementing the performance appraisal policy so that health workers should be motivated thereby improving their performance when rendering care to obstructed labour women. In order to drive adoption and adherence of health workers to OLMP, the management should start a system of rewarding best performers in maternity department. For example , on quarterly basis, the management through the Quality Improvement (QI) team can do case audits of all cases managed using checklist and identity best clinicians and midwives who have performed according to standards and reward them inform of monetary or other incentives. Pay for performance accelerates the adoption of guidelines .

Similarly, the Hospital matron and the Head of clinical department should allocate health workers that have attended the CPD session on OLMP in maternity department in order to create opportunity to practice the skills they have learned. Protocols can lead to improved quality care only if they are translated into daily midwife/ clinician practice.

In addition, management of Thyolo hospital should procure enough Blood pressure machines and thermometers using the Other Recurrent Transactions (ORT) fund within the hospital budget. They should also purchase fuel for generators in preparedness for electricity load shedding.

Policy

The Ministry of Health should develop standards for hospital ward supervision which will enable manager's to conduct their work effectively. Ministry of Health through the Reproductive Health Directorate should also design obstructed labour management forms which should be used in the hospitals when midwives and clinicians have encountered a case of obstructed labour. Management form will have all the steps for the management of obstructed labour and health workers will just be filling that form. This will act as a reminder to midwives and clinician on what is supposed to be done to an obstructed laboring woman. Active steps such as reminders are necessary to translate clinical protocols into daily practice .

In addition, the Ministry of Health through the Reproductive Health Directorate should scale up the Results -Based Financing for Maternal and Neonatal Health Initiative (RBF4MNH) to Thyolo District Hospital. This will assist the hospital to have adequate equipment because the money to be used in the procurement of essential equipment will be available through the Initiative.

Research

Qualitative research study needs to be conducted in order to assess midwives and clinicians individual factors that influence the use of obstructed labour management protocols.

Conclusion

Although obstructed labour still prevails as an important obstetric problem in Malawi especially at Thyolo district hospital, midwives' and clinicians' adherence to obstructed labour management protocols was found to be low at 24%. Non-compliance to obstructed labour protocols lead to both maternal and neonatal complications such as wound infections, birth asphyxia, fresh still births. The reasons for non-adherence to protocols were inadequate supervision, inadequate human and material resources and lack of performance appraisal. Improving adherence requires a supportive environment. Therefore, availability of material and human resource, supervision and performance appraisal must be properly managed since they have a direct impact on quality of care rendered to women with obstructed labour.

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Appendices

Appendix 1: Confidentiality Agreement Form

I, _____ declare today the _____of _____2017 that will keep the information obtained while collecting data strictly under confidential and will not disclose the information to any concerned parties.

Name of ward clerk/researcher_____Signature_____Date_____

Name of Hospital Management member_____Signature_____Date_____

Appendix 2: Checklist for assessing Midwives and Clinicians adherence to OLMP

Section A: Demographic characteristics of obstructed labour women				
	Question	**Response**	**Code**	**comments**
A1	What was the age of a woman during delivery?	15-19 years 20-25 years 25-30 years 30-35 years Above 35 years	1 2 3 4 5	
A2	What was the gravidity of the woman before delivery?	gravid one Gravida two Gravida three Gravida four and above	1 2 3 4	
A3	What was the marital status of the woman?	Married Single	1 2	
A4	What was the education level of woman?	Primary Secondary	1 2	

		Tertiary	3	
A5	What was the religion of the woman?	Catholic CCAP Muslim SDA Pentecost	1 2 3 4 5	
A6	What was the occupation of the woman?	Employed Business Not employed	1 2 3	
A7	What was the sero-status of the woman?	Reactive Non-reactive	1 2	
A8	What was the height of the woman?	less than 150cm More than 150cm	1 2	

Section B: Checklist for assessing health workers adherence to OLMP			
	Question	**Answer and code**	**Comments**
B1	Were Contractions frequency checked and charted every hour?	Yes----1 No-----2	
B2	Was Fetal presentation documented hourly?	Yes----1 No-----2	
B3	Was Partograph commenced when cervical dilatation is 4cm or more?	Yes----1 No-----2	
B4	Were Maternal vital signs BP, P, R documented hourly and Temperature documented 4 hourly?	Yes----1 No----2	
B5	Was Cervical dilatation recorded at least every 4 hours?	Yes----1 No-----2	
B6	Was Fetal heart rate recorded at least every 30 minutes?	Yes---1 No-----2	
B7	If alert line was crossed, any action taken?	Yes---1	

		No-----2	
B8	If action line was reached, any action taken?	Yes----1 No-----2	
B9	Was intravenous infusion line inserted?	Yes---1 No----2	
B10	Were blood sample taken for Hemoglobin, grouping and cross-matching?	Yes----1 No-----2	
B11	Was urinary bladder catheter inserted?	Yes---1 No----2	
B12	Was Chloramphenicol 1g intravenous stat given pre-operatively?	Yes ---1 No----2	
B13	Was fluid intake recorded every hour?	Yes—1 No----2	
B14	Was urine output recorded hourly	Yes---1 No-----2	
B15	If fetus was alive, did midwives /clinicians prepare to resuscitate the baby at births?	Yes—1 No----2	
B16	If the fetus was alive, was caesarean section conducted within 1 hours of diagnosis?	Yes---1 No----2	
B17	Was status of the incision area recorded every 15 minutes of the first hour post-operatively?	Yes—1 No----2	
B18		Yes ---1	

	Was status of the vagina recorded every 15minutes of the first hour post-operatively?	No-----2	
B19	Was metronidazole 400mg 8 hourly, Benzylpenicillin 2MU every 6 hours, Gentamycin 240mg given once daily for 5days?	Yes—1 No----2	
B20	Was Vesico-Vagina Fistula monitored?	Yes---1 No---2	
B21	Was Recto-vagina fistula monitored?	Yes—1 NO----2	
B22	Was anaemia monitored?	Yes ---1 No-----2	
B23	IF BTL was not done, was any family planning method offered?	Yes----1 No----2	
B24	Was Health education given to the couple on future implications of pregnancies?	Yes---1 No----2	
B25	Was advice on elective CS next time given?	Yes—1 No----2	

Section C: Outcome of the care rendered to obstructed labour women				
	Question	**Response**	**Code**	**Comments**
C1	How much time was taken from diagnosis to performance of caesarean section?	Within one hour 2 -4 hours 4 hours and above	1 2 3	
C2	What was the status of the neonate?	Asphyxiated Non-asphyxiated Fresh still Births	1 2 3	
C3	what was the status of the woman	Alive Died	1 2	
C4	What were the complications that the women encountered?	PPH wound infection Puerperal sepsis No complication	1 2 3 4	

Section D: Checklist for assessing structural factors				
	Question	**Answer**	**Code**	**Comment**
D1	Was metronidazole available in the Pharmacy?	Yes No	1 2	
D2	Was benzyl penicillin available in the pharmacy?	Yes No	1 2	
D3	Was gentamycin available in the pharmacy?	Yes No	1 2	
D4	Was Chloramphenicol available in Pharmacy?	Yes No	1 2	
D5	Were catheters available in the pharmacy?	Yes No	1 2	
D6	Were catheter bags available in the pharmacy?	Yes No	1 2	
D7	Was Normal saline available in the pharmacy	Yes No	1 2	
D8	Was Ringer's lactate available in the pharmacy?	Yes No	1 2	
D9	Were Blood bags available in the laboratory or pharmacy	Yes No	1 2	
D10	Were syringes available in the laboratory or pharmacy?	Yes No	1 2	

D11	Did the laboratory or pharmacy had blood group screening agents?	Yes No	1 2	
D12	Did theatre had sterile caesarean section set?	Yes No	1 2	
D13	Did theatre had functional suctioning machine?	Yes No	1 2	
D14	Did labour ward had functional vacuum extractor?	Yes No	1 2	
D15	Did labour ward had functional fetal scope?	Yes No	1 2	
D16	Was functional BP machine available in labour ward?	Yes No	1 2	
D17	Were functional thermometers available in labour ward	Yes No	1 2	
D18	Was a functional generator available at the hospital	Yes No	1 2	
D19	W as fuel available to run the generator at the hospital?	Yes No	1 2	
D20	Were medical doctors available at the hospital?	Yes No	1 2	
D21	Were medical assistants available at the hospital?	Yes No	1 2	

D22	Were clinical officers available at the hospital	Yes No	1 2	
D23	Were registered nurse-midwives available at the hospital	Yes No	1 2	
D24	Were Nurse midwives technicians available at the hospital?	Yes No	1 2	
D25	Were community midwives available at the hospital?	Yes No	1 2	
D26	Were the nurse midwives and clinicians trained on management of obstructed labour?	Yes No	1 2	
D27	Were OLMP present in the ward the previous years?	Yes No	1 2	
D28	Did the DHO had ward supervision roster?	Yes No	1 2	
D29	Did the DMO had a ward supervision roster?	Yes No	1 2	
D30	Did the DNO had ward supervision roster	Yes No	1 2	
D31	Did the hospital matron had ward supervision roster	Yes No	1 2	
D32	Did the hospital had performance appraisal policy	Yes No	1 2	

Appendix 3: Letter from the District Health Officer, Thyolo Hospital

Telephone: + 265 1473 411
Facsimile: + 265 1473 409

All Communications should be addressed to:
The District Health Officer

In reply please quote No. TDH/
.....

MINISTRY OF HEALTH
Thyolo District Hospital
P.O. Box 21
Thyolo.

5th May,2017.

The Chairperson,
College of Medicine Research and Ethics Committee,
P/Bag 360,
Chichiri,
Blantyre 3.

Dear Sir/Madam,

SUPPORT LETTER FOR ESMIE KAMALIZA

Reference is made to the request made by Esmie Chamalawa Kamaliza to conduct a study titled "***Assessment of midwives and clinicians adherence to national obstructed labor management protocols***" at Thyolo district hospital.

Thyolo District Health Office would like to convey its recommendation towards the stated study. We find the research question to be valuable and relevant in our setting. We believe the study will be able to generate local evidence that will as well assist us with relevant information to improve on our health service delivery.

Our office will render the necessary support to enable this study be a success. We will also ensure that the study adheres to all ethical considerations.

Dr. Michael MUROWA
DISTRICT HEALTH OFFICER

Appendix 4: Ethics certificate of approval

CERTIFICATE OF ETHICS APPROVAL

This is to certify that the College of Medicine Research and Ethics Committee (COMREC) has reviewed and approved a study entitled:

P.06/17/2193 - Assessment of midwives and clinicians acherence to national obstructed labour management protocols at Thyolo District Hospital by Esmie C. Kamaliza

On 19th July 2017

As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC as stipulated in the attached page

Approved by College of Medicine 19 JUL 2017 (COMREC) Research and Ethics Committee

Dr. J. Aljazeera Chairman- Vice-Chairperson (COMREC)

Date 19/7/17