

**FACTORS ASSOCIATED WITH CAESAREAN SECTION AMONG
WOMEN DELIVERING AT MBEYA ZONAL REFERRAL HOSPITAL**

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**MSc (Midwifery & Women Health) Dissertation
Muhimbili University of Health and Allied Sciences
October, 2017**

Muhimbili University of Health and Allied Sciences

Department of Community Health Nursing



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By

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**A Dissertation Submitted in (partial) Fulfilment of the Requirements for the
Degree of Master of Science (Midwifery and Women's Health) of**

**Muhimbili University of Health and Allied Sciences
October, 2017**

CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences of dissertation entitled: “*Factors Associated with caesarean section among women delivering at Mbeya Zonal Referral Hospital, Mbeya, Tanzania*”, in fulfilment of the requirements for the degree of Master of Science (Midwifery and Women’s Health) of Muhimbili University of Health and Allied Sciences.

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DECLARATION AND COPYRIGHT

I, **Samwel Mwangoka**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature:

Date:

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ACKNOWLEDGEMENTS

I thank the almighty God for keeping and protecting me during the entire period of conducting my research.

My sincere special thanks and appreciation go to my supervisors Dr. Thecla W. Kohi and Dr. Columba Mbekenga for their guidance, support and encouragement throughout the entire period of conducting my research.

I am also grateful to express my gratitude to MUHAS – School of Nursing academic staff for their constructive critiques, suggestions and encouragements throughout the duration of my studies.

Also my sincere gratitude goes to Director of Mbeya Zonal Referral Hospital who is the Chairperson of Mbeya Medical Research and Ethics Committee for allowing me to conduct the study at his institution.

I would like to extend my special thanks to the head of Obstetrics and Gynecology department of Mbeya Zonal Referral Hospital, Dr. France John and all staff for their cooperation and support during data collection.

I am also grateful to express my heartfelt appreciations to Dr. Lugano Daimon and his wife for encouragement and statistical assistance.

My sincere special thanks and appreciations go to my family, my lovely wife Florencia and my daughters Beatrice and Eunice, my Father and my Pastors for their prayers, encouragement, social and moral support during entire time of my studies.

Lastly but not least, my appreciation goes to my colleagues and all others who in one way or another contributed to accomplishment of my dissertation, I sincerely thank you all.

DEDICATION

This dissertation report is dedicated to my lovely wife Florencia and my beloved daughters Beatrice and Eunice.

ABSTRACT

Background: The rate of caesarean section has been rising in most of countries around the world. World Health Organization (WHO) has recommended the limit of caesarean section rate to be 15%, as rate beyond this limit have negative consequences to both mother and the baby. Tanzania is among the countries with limited resources settings, caesarean section rate is 6% but the rate of Referral Hospitals is more than 30% which is beyond WHO recommended limit. The factors associated with caesarean section need to be explored so as to complement with other studies and provide specific recommendations on appropriate interventions to improve obstetric practice particularly in reducing caesarean section.

Objectives: To assess the factors associated with caesarean section deliveries.

Methodology: Quantitative approach using analytical cross sectional study design. A total of 400 post natal mothers were randomly selected in post natal ward. Data was collected from patient records and interview using a structured questionnaire. Descriptive statistical analysis using mean, frequency and proportion was computed. Chi-square test ($P < 0.05$) and odds ratio with corresponding 95% confidence interval was used to determine the association between dependent and independent variables as well as predictors of caesarean section deliveries.

The ethical clearance was acquired from MUHAS – IRB and MMREC, also written informed consent was used to obtained consent from all participants.

Results: The proportion of caesarean section among participants was 186 (46.5%), $N = 400$. The obstetric factors associated with caesarean deliveries was maternal age ($P < 0.001$, OR = 4.456), parity ($P < 0.05$), birth weight ($P < 0.05$) and co morbid illness such as Pregnancy Induced Hypertension (PIH), Pre-eclampsia /eclampsia and Genital warts ($P < 0.001$). Non obstetric factors identified were marital status and socio economic status ($P < 0.05$, OR = 2.303).

Conclusion: The rate of caesarean section at Mbeya Zonal Referral hospital is high. To maintain optimum rate, there a need to reduce unnecessary cesarean section among women

with low risks. Health care providers should be aware of the risks of unnecessary caesarean section as well as women should be fully informed on benefits and risks of caesarean section.

Recommendations: MOHCDGEC may incorporate Midwives Model of Care in antenatal and postal services, Mbeya Zonal Referral hospital need to develop and operationalise guideline for safe conduct of vaginal birth after Caesarean section delivery, regular coaching of staff on proper foetal monitoring as well as conducting audit of caesarean section deliveries.

TABLE OF CONTENTS

CERTIFICATION	i
DECLARATION AND COPYRIGHT	i
DECLARATION AND COPYRIGHT	ii
ACKNOWLEDGEMENTS	iii
DEDICATION	iv
ABSTRACT	v
LIST OF FIGURES	ix
LIST OF TABLES	x
LIST OF ABBREVIATIONS	xi
DEFINITION OF TERMS	xii
CHAPTER ONE.....	1
1.0 INTRODUCTION	1
1.1 Background.....	1
1.2 Problem Statement.....	3
1.3 Significance of the Study	4
1.4 Research questions.....	4
1.5 Research Objectives.....	5
1.6 Conceptual Model.....	6
CHAPTER TWO.....	8
2.0 LITERATURE REVIEW	8
CHAPTER THREE.....	13
3.0 METHODOLOGY	13
3.1 Study design.....	13
3.2 Study Setting.....	13
3.3 Study population.....	14
3.4 Sample size	14
3.5 Sampling technique.....	15
3.6 Inclusion criteria	15

3.7 Exclusion criteria	15
3.8 Data collection	15
3.9 Pilot of the study	16
3.10 Validity and Reliability of the tool	16
3.11 Training of research assistants	17
3.12 Data Management	17
3.13 Data analysis	17
3.14 Ethical consideration.....	18
CHAPTER FOUR	19
4.0 PRESENTATION OF RESEARCH FINDINGS AND DATA ANALYSIS	19
4.1 Socio-Demographic Characteristics.....	19
4.3 Bivariate analysis of obstetric factors associated with caesarean section deliveries	25
4.4 Indications of caesarean section delivery	28
4.5 Non obstetric factors associate with caesarean section deliveries	31
4.6 Bivariate analysis of non obstetric factors associated with caesarean section deliveries	32
CHAPTER FIVE	38
5.0 DISCUSSION.....	38
5.1 Conclusion	42
5.2 Study limitation and strength	43
5.3 Recommendations.....	43
REFERENCES	45
APPENDICES	51
Appendix I: Questionnaire – English Version	51
Appendix II: Dodoso - Swahili Version	57
Appendix III: Informed Consent - English Version	63
Appendix IV: Informed Consent - Swahili Version	66
Appendix V: Ethical Clearance	69
Appendix VI: Ethical Approval from Mbeya Medical Research and Ethics Committee.....	70

LIST OF FIGURES

Figure 1:	The conceptual model on determinants of caesarean section deliveries.....	7
Figure 2:	Rate of caesarean section.....	22
Figure 3:	Type of caesarean section.....	28
Figure 4:	Desire for future vaginal birth after caesarean section (VBAC).....	31
Figure 5:	Foundation of CS decision making.....	31
Figure 6:	Preferred mode of delivery.....	33
Figure 7:	Factor Influenced Caesarean Section delivery preference.....	34
Figure 8:	Perceived safety.....	35

LIST OF TABLES

Table 1:	Demographic distribution of the study population.....	20
Table 2:	Antenatal Clinic attendance.....	21
Table 3:	The rate of CS by demographic distribution.....	23
Table 4:	Obstetric factors.....	24
Table 5:	Association between obstetric factors and mode of delivery.....	26
Table 6:	Number of caesarean section done.....	28
Table 7:	Indication of caesarean section.....	29
Table 8:	Client satisfaction on CS decision.....	30
Table 9:	Association between non obstetric factors and mode of delivery.....	32
Table 10:	Individuals influencing choice of delivery among women.....	34
Table 11:	Reason for perceiving CS as the safe mode of delivery.....	35
Table 12:	Reasons reported by participants which influence caesarean section deliveries.....	36
Table 13:	Logistic regression on factors associate with Caesarean Section.....	37

LIST OF ABBREVIATIONS

ANC	Ante Natal Clinic
CPD	Cephalo Pelvic Disproportion
CS	Caesarean section
GA	Gestational age
HMIS	Health Management Information System
IPPM	Intramural Private Practice Mbeya
IRB	Institutional Review Board
KCMC	Kilimanjaro Christian Medical Centre
MMREC	Mbeya Medical Research and Ethics Committee
MNH	Muhimbili National Hospital
MTUHA	Mfumo wa Taarifa za Uendeshaji wa Huduma za Afya
MUHAS	Muhimbili University of Health and Allied Sciences
MZRH	Mbeya Zonal Referral Hospital
NHIF	National Health Insurance Fund
PPH	Post Partum Haemorrhage
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
TDHS	Tanzania Demographic and Health Survey
VBAC	Vaginal Birth After Caesarean Section
WHO	World Health Organization
X	Pearson Chi-square

DEFINITION OF TERMS

Caesarean section; is the procedure of delivering the baby by making surgical incisions in the woman's abdominal wall and uterus (Moges, 2014).

Caesarean section rate; is the number of caesarean deliveries over the total number of live births within a period of time, and is usually expressed as a percentage (Betrán et al., 2007).

Elective caesarean section; is the type of CS where the decision to carry out the procedure has been taken during the pregnancy before labour has started (Michaluk, 2011).

Emergency caesarean section; is the type of CS carried out when adverse conditions develop during pregnancy or labour which indicates need for emergency/urgent Caesarean (Oguta, 2015).

Parity; The number of born children delivered by one woman (Ukeme, 2014).

Gravida; The number of the pregnancy that the woman is in (Ukeme, 2014).

Operational definition

Obstetric factors: These are pregnancy related conditions which may arise during pregnancy or labour which affect pregnancy and delivery process and predispose a patient to CS delivery. These factors can be maternal, foetal or combined foetal and maternal factors.

Non-Obstetric factors: These are non pregnancy related situations that influence mode of delivery or performance of caesarean section.

Extreme ages: These are ages below eighteen (18) and above thirty five (35) which predispose women to undergo caesarean section

Extreme birth weight: Is the low birth below 2.5 kg and birth weight above 4.0 which can predispose women to undergo caesarean section.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Caesarean section is a surgical procedure whereby the foetus, placenta and membranes are delivered through an incision on the mother's abdomen and uterus (Moges et al., 2015). This procedure was introduced in clinical practice as a life saving technique for both mother and the baby (Kaplanoglu, Bulbul, Kaplanoglu, & Bakacak, 2015). Caesarean section delivery has played a major role in lowering both maternal and neonatal morbidity and mortality rates. Despite of the improved surgical techniques (Moges et al., 2015), caesarean section is not a risk free procedure (Sakae et al., 2009).

World Health Organization (WHO) has recommended the limit of caesarean section rates that should not exceed 15% (Stanton & Holtz, 2006). There is no justification for caesarean rates higher than 10 % to 15 % (Vieira, Fernandes, Oliveira, Silva, & Vieira, 2015). Also, there is no additional benefit to the mothers and infants when rates exceed this limit, rather is associated with negative consequences to the mother and baby which increases the risk of morbidity and mortality (Betrán et al., 2007; Gibbons et al., 2010).

Caesarean section rates have been increasing substantially worldwide since the 1980s, and currently is the concern in many countries (Khawaja, Jurdi, & Kabakian-Khasholian, 2004). The global caesarean section rates is unevenly distributed as there is a wide variation among countries in the world (Beliza et al., 2006). The highest caesarean section rates is in Brazil where the rates have rapidly increased in the last 30 years reaching to 57% in 2014 (Esteves-pereira, Deneux-tharoux, & Nakamura-pereira, 2016) and the lowest rate is found in Africa about 3.5% (Moges et al., 2015; Nilsen, Østbye, Daltveit, Mmbaga, & Sandøy, 2014). In Tanzania caesarean section rate is 6% (TDHS., 2016).

The main factors for increase in caesarean section deliveries has been reported to be increased medical indications, obstetrical and non obstetrical which are described in relation to the context in which caesarean section take place.

Indications of caesarean delivery which may endanger the life of the mother and/or foetus has been increasing due to advance in technology (Moges et al., 2015; Ye et al., 2016). Most medical indications of caesarean delivery are not absolute but subjective and culture bound (Stivanello, Rucci, Lenzi, & Fantini, 2014). There are some variation among hospitals and countries with respect to indications of caesarean delivery however, they do not differ in most of obstetric factors (Vieira et al., 2015).

Obstetrical factors have been influenced by demographic characteristics of a woman such as maternal age and parity (Muganyizi et al., 2008), also factors such as adverse events in pregnancy, birth weight and co-morbid illness (Oguta, 2015) influence caesarean section deliveries.

Non obstetrical factors of caesarean delivery have been influenced by demographic, socioeconomic and cultural factors of the women (Orsi & Chor, 2006). Other factors are related to health care models including medical practice and preferences of pregnant woman towards caesarean delivery (Vieira et al., 2015). Also organizational factors and health care provider attitudes towards labour management (Stivanello et al., 2014).

It is necessary to identify factors associated with caesarean delivery, as the knowledge of these factors which are predictors of the increase of caesarean delivery is the step towards reducing unnecessary caesarean section delivery. The study findings will help to inform the policy makers and provide recommendation for improving obstetric practice.

1.2 Problem Statement

Caesarean section is a common surgical procedure performed on women worldwide. The rate of caesarean section in most countries around the world has continued to increase over recent years (Dodd, Crowther, Hiller, Haslam, & Robinson, 2007). This procedure when conducted above the limit recommended by WHO increases the likelihood of adverse effects to mothers and newborns.

There are short and long term adverse effects associated with caesarean section. The short term adverse effects for mothers include increased risk of infections, surgical injury, emergency hysterectomy and long lasting pain (Kaplanoglu et al., 2015). While the long term adverse effects may occur in future pregnancies such as ectopic pregnancy, placenta previa, placental abruption and uterine rupture (Betrán et al., 2007). Also babies born by caesarean section are more likely to have surgical cuts and difficulty getting breastfeeding.

The adverse effects related to caesarean section are higher in developing countries due to shortage of highly skilled practitioners and lack of advanced technology in performing this procedure which impose mothers to high risks of developing complications (Betran, Torloni, Zhang, & Gülmezoglu, 2015).

In Tanzania, studies on caesarean section have been conducted in two referral Hospitals. At Kilimanjaro Christian Medical Centre (KCMC), the trends of caesarean section deliveries from 2005 to 2010 ranges from 29.9% to 35.5%. The leading indication for operation was previous caesarean section (Worjolah et al., 2012). While at Muhimbili National Hospital (MNH) the trend of caesarean section rates from 2002 to 2011 raised from 19% to 49% (Litorp, Kidanto, Nystrom, Darj, & Essén, 2013). The caesarean section rates of the two referral hospital exceed the limit recommended by WHO (Nilsen et al., 2014).

However there is limited study on caesarean section which have been conducted and published at Mbeya Zonal Referral Hospital (MZRH) which is one of the referral hospitals of Tanzania located in Southern highland zone. According to Hospital report of 2014 and 2015 the averages of caesarean section rates per month ranges from 36% to 42%.

The rates are almost similar to other referral hospitals but factors contributing may be different. As factors attributed can be obstetrics and non obstetrics which are social, demographic, cultural and economic characteristics of pregnant women and medical practice and preferences of specific organization (Orsi & Chor, 2006).

There are limited published studies on factors associated with caesarean section deliveries at MZRH which need to be assessed. The study has been conducted to assess the factors so as to complement with other studies to contribute in the body of knowledge and provide context specific recommendations on appropriate interventions to improve medical practice particularly caesarean section.

1.3 Significance of the Study

Findings of this study will be used to provide knowledge on factors associated with caesarean section deliveries in Mbeya Zonal Referral Hospital. By understanding the factors associated with increase in caesarean section rates, the study provides recommendations on interventions to improve obstetrics practice by reducing unnecessary caesarean section delivery. The findings show the need to develop policy brief on improving obstetric practice especially reducing unnecessary caesarean section. Also this study is the foundation for more studies to be conducted.

1.4 Research questions

1. What are the obstetric factors associated with caesarean section at Mbeya Zonal Referral Hospital?
2. What are the indications of caesarean at Mbeya Zonal Referral Hospital?
3. What are the non obstetric factors associated with caesarean sections at Mbeya Zonal Referral Hospital?

1.5 Research Objectives

1.5.1 Broad Objective

To assess factors associated with caesarean section among women delivering at Mbeya Zonal Referral Hospital

1.5.2 Specific objective

1. To determine the obstetric factors associated with caesarean section at Mbeya Zonal Referral Hospital
2. To identify indications of caesarean section at Mbeya Zonal Referral Hospital
3. To determine non obstetric factors associated with caesarean sections at Mbeya Zonal Referral Hospital

1.6 Conceptual Model

The conceptual model is a building block of existing knowledge through different literature review.

The conceptual model on determinants of caesarean section deliveries was modified from conceptual model developed by Tom Joseph Oguta in 2015 which describes the psychosocial determinants of caesarean section deliveries.

Oguta's (2015) conceptual model is based on social epidemiology theories which describes the convergence of factors such as psychological state, personal traits, sexual behaviours, social experiences and social interaction that link social conditions to important health outcomes.

This conceptual model is the joint of multiple factors that affect decision of caesarean section deliveries at different levels of social environment which include individual, interpersonal, community, organizational and public policy.

The researcher has modified Oguta's conceptual model by removing three non obstetric factors which are community, organizational and public policy factors. The obstetric factors and indications of caesarean section deliveries from Orsi & Chor, 2006 and Sakae et al., 2009 have been instead added.

The conceptual model provides the basis for determining factors associated with caesarean section deliveries. Hence, the concepts have been used in data collection tool and analysis to establish determinant factors of caesarean section deliveries.

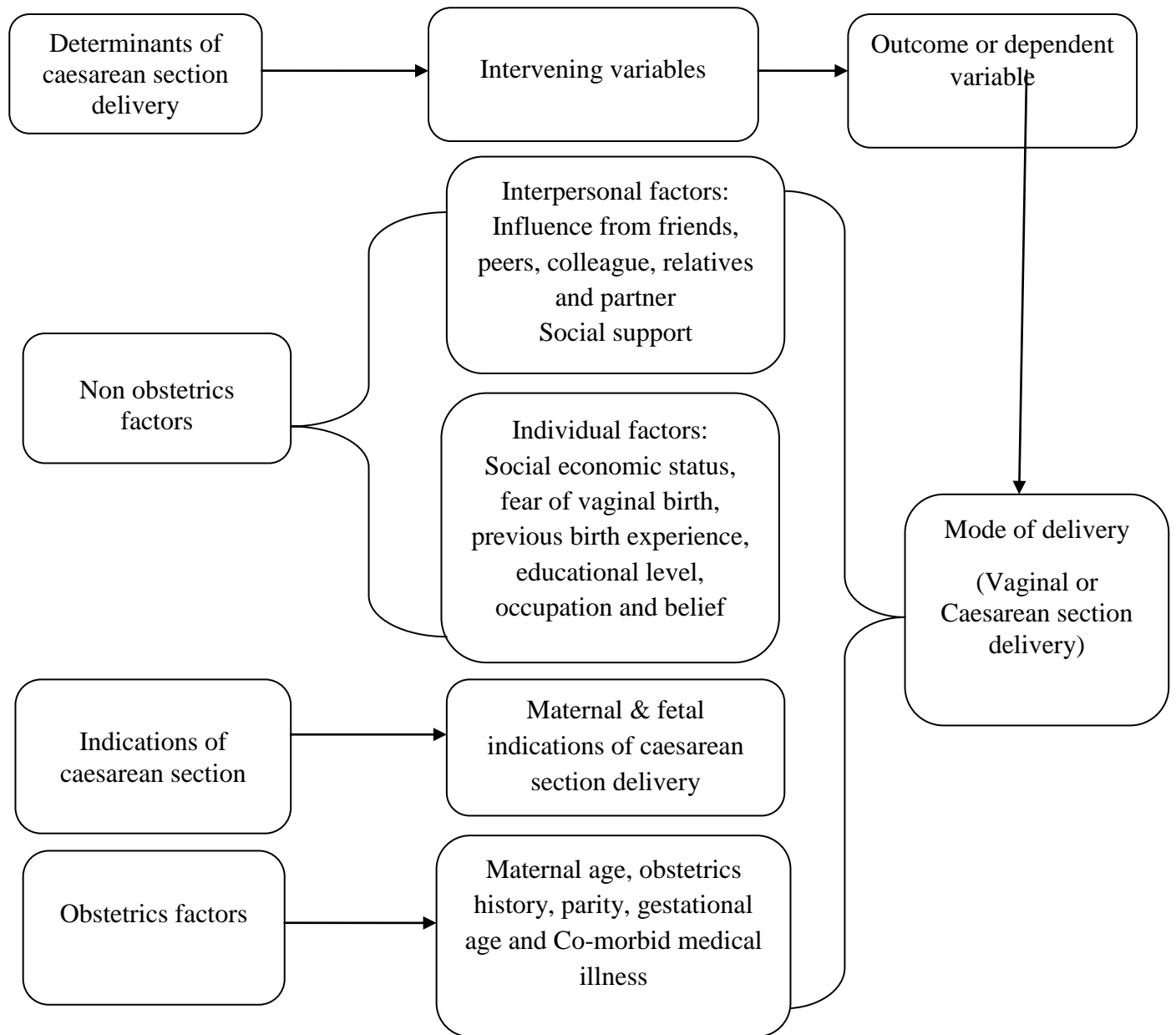


Figure 1: The conceptual model on determinants of caesarean section deliveries (Oguta, 2015)

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter is built by evidence from previous studies that explored on caesarean section deliveries. The studies focus on caesarean sections rates, indications and associated factors. The reviewed literature consists of four sections; prevalence of caesarean section, indications of caesarean section, obstetrics and non obstetrics factors related to caesarean delivery.

Prevalence of caesarean section

Over the past 20 years, there have been many trends in maternal childbirth choices. Epidural anaesthesia for labour had increased whilst decision to have a vaginal birth after caesarean section (VBAC) declined. Thus, significantly increased the rate of caesarean section delivery for non medical indications (Puia, 2013).

In the past decade, the rate of caesarean section has increased in both developed and developing countries (Liu et al., 2014). Worldwide, caesarean section rates have increased by 50 % or more over the last decade, with rates peaking at some regions of the world (Schemann, Patterson, Nippita, Ford, & Roberts, 2015). Approximately 50% of the countries in the world have caesarean section rates more than 15% (Gibbons, 2016).

Esteves-pereira et al, (2016) has reported Brazil as the country with highest caesarean section rates in the world; it was 38% in year 2000 and 57% in 2014. It has been evidenced to be higher in private hospitals (70%) than in public hospital (32%) (Orsi & Chor, 2006). Moreover, China is accounted for higher caesarean section rate 54.9% (Liu et al., 2014).

It has been estimated that one third of caesarean sections worldwide are conducted for non-medical indications and have been described as unnecessary (Aminu, Utz, Halim, & Broek, 2014). Globally, excess 6.2 million of unnecessary caesarean sections are performed yearly. China and Brazil contribute to approximately 50% of the total number of unnecessary caesarean section (Gibbons et al., 2010).

Africa region is considered to have lower caesarean section rates. The trends of caesarean section delivery in Africa range from 0.6% to 18.0%. However the facility based rates are high (Worjolah et al., 2012).

In Tanzania, the caesarean section rates are still low about 5% in 2010 (TDHS, 2010) and 6% in 2015 (TDHS, 2015). However, the health facility based rates are still high compared to population based estimates (Nilsen et al., 2014).

The study conducted in Tanzanian referral hospital between 2005 and 2010 showed that the trend of caesarean section rates has been increasing from 29.9% to 35.5% (Worjolah et al., 2012). Litorp et al. (2013) study revealed that the trend of caesarean section rates from 2002 to 2011 rose from 19% to 49%.

Obstetrics factors associated with caesarean section deliveries

Caesarean section deliveries has been described to be associated with obstetric factors such as maternal age and parity, adverse events in pregnancy and obstetric history (Oguta, 2015).

In the study conducted in South Africa showed that, the most demographic factor associated with high CS rates is maternal age. Older than 35 years nulliparous and multiparous women tend to deliver more by Caesarean section (Inyang-Otu, 2014). Another demographic factors which has been positively associated with caesarean section rates are increase in parity and increase in body mass index (Galtier-Dereure, 2014).

Moreover study shows that caesarean rates were highest among women over 30 and those who were primiparous or who were multiparous with a previous caesarean section, presence of pathology in the pregnancy and/or pre-birth and gestational age less than 37 weeks and over 40 week (Sakae et al., 2009).

Furthermore studies showed that risk factors associated with caesarean deliveries are advancing age, medical conditions during pregnancy or pre-pregnancy, obesity, gestational age of less than 38 weeks, infants with extremes birth weight either very low birth weight or high birth weight (Patel, Peters, Murphy, & Team, 2005). Also studies revealed that amongst

women who attempt vaginal delivery with increased foetal birth weight are associated with higher odds of emergency caesarean section (Sakae et al., 2009).

The study conducted in England showed similar results; women who deliver at gestation age of less than 37 weeks or post term more than 40 weeks were more likely to experience caesarean delivery compared to women at 38-40 weeks gestation (Busaidi, Al-farsi, Ganguly, & Gowri, 2012).

Therefore the literature reveals that; obstetrics factors associated with caesarean section are gestational age, parity, foetal birth weight, and obesity, co-morbid pathology in pre-pregnancy and pregnancy state and maternal age.

Indications of caesarean section

The indications of caesarean section varies according to regions, medical conditions and patient ethnicity (Liu et al., 2014). The study conducted in United Kingdom revealed that the leading indications of caesarean section among singleton births are previous caesarean section (70.8%) and breech presentation (89.8%). However, rates of emergency caesarean section are higher than elective caesarean section (Bragg et al., 2010).

The study conducted in china revealed that the most common indications of caesarean section are CPD (14.08%), foetal distress (12.46%), previous caesarean section (10.25%), malpresentation and breech presentation (6.56%), macrosomia (6.10%) and other indications account for 22.12% (Liu et al., 2014).

Another study affirms that, common indications of caesarean section are obstructed labour, poor presentation, previous caesarean section, and foetal distress, uterine rupture and ante partum haemorrhage, and pre- eclampsia / eclampsia. Among these indications 26% were decided on appropriate indications while indications of 38% were unclear (Delbaere et al., 2012).

Furthermore another study conducted in South Africa revealed that the commonest five clinical indications for caesarean section were, foetal distress, failure to progress in labour ,

previous caesarean delivery, malpresentation and hypertensive disorders in pregnancy (Inyang-Otu, 2014)

The study conducted in Tanzania at Muhimbili National Hospital revealed that common indication includes obstructed labour, CPD, failure to progress, previous caesarean section and foetal distress. However previous caesarean section is the most frequent (30.2%), then obstructed labour (14.4%) and foetal distress (13.6%) (Mdegela et al., 2012).

Non obstetrics factors associated with caesarean section deliveries

The studies shows; different countries have unique characteristics of health care organization, public health priorities, health policies and level of state intervention and involvement at different levels of care. Social, economic and educational differences of their populations are also relevant (Orsi & Chor, 2006).

There are various factors which are non medical have been associated with caesarean section rates. In developed countries, rising of maternal age at first pregnancy, technological advances that have improved the safety of the procedure changes in women's preferences of mode of delivery (Bragg et al., 2010).

Moreover studies showed that caesarean section is associated with difference in socio economic and demographic characteristics, influence of health care provider especially in private hospitals and maternal preferences (Black, Bhattacharya, Philip, & Norman, 2016).

Furthermore, study conducted in south Africa shows that, there is significant difference in caesarean section rate among different population groups, it is higher among whites and coloured and low among blacks which implies that socioeconomic status is the factor affecting the rates (Matchidze et al., 2016).

In South African studies, caesarean section on demand contributes to high caesarean section rates in private hospital where rates are two folds higher than public hospital (Sakae et al., 2009). This has been attributed by financial incentive influenced some doctors to perform unnecessary caesarean sections (Inyang-Otu, 2014).

Also pregnant medical professionals have been reported to have a high caesarean delivery rate and fear of legal action affects the attitude of many doctors and midwives who have a low threshold for caesarean section. Clinicians in developed countries have admitted that the medical legal environment influences their decision making (Inyang-Otu, 2014).

The study conducted to assess decision making on mode of delivery among women revealed that; women's decisions are influenced by previous birth experiences, fear of vaginal birth, a prior caesarean section, perceived safety of a planned caesarean section, need for choice and control as well as social and cultural factors (Souza, 2013).

According to literature reviews on caesarean section deliveries globally. It provides the impression that, there is substantial growth of caesarean section deliveries in most of the countries around the world. This is influenced by advance in medical technology, maternal and foetal status, demographic, socio economic and cultural factors of women however other factors may be still unknown which need more studies for exploring to complement with other studies in the body of knowledge.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

Quantitative approach employing analytical cross sectional design was used. The design was chosen because it is effective in identification and description of issues in current practice (Hulley, Cummings, & Newman, 2013). This is the best design to determine prevalence and establishing associations between predictor and outcome variables (Mann, 2003).

3.2 Study Setting

Mbeya Zonal Referral Hospital is the public Referral Hospital in Southern Highland Zone located in Mbeya city. The hospital is serving six regions which are Mbeya, Songwe, Katavi, Rukwa, Ruvuma and Iringa.

The total number of health workers at the obstetrics and gynaecology department is 88 whereby there are 78 nurses and midwives, 10 doctors (5 registrars and 5 obstetrics and gynaecology specialist)

Majority of women delivering at this hospital come direct from home (self referral) when they feel labour pain while one third of women are referred from health facilities around the city, districts and other regions of Southern highland zone (MZRH report, 2014).

The average number of deliveries per day is 25, among these deliveries the average number of caesarean section is 9 (39%). The total number of annual hospital deliveries is about 5791, with average of 483 deliveries per month. The proportion of caesarean sections deliveries per month ranges from 36% to 42% (MZRH report, 2015)

Women admitted in the labour and antenatal ward are cared by nurse midwives, who assess the pregnant women by taking history, conduct physical examination and initiates partograph when women are in true labour, and then continue to monitor progress of labour, maternal and foetal condition. Also there is a team of doctors on call comprising of interns, registrars and

specialists who are reviewing the women's in labour in collaboration with nurses and midwives. The team decides on management of the patient including caesarean section. When the decision to perform caesarean section is made, the woman is counselled, prepared and taken to operating theatre for surgery.

All information including history taking, physical examination, labour management, maternal and foetal assessment and investigations are recorded and attached to patient's files, also time and date is recorded. After discharging the patients the files are safely stored at the medical records office.

All deliveries are recorded in Health Management Information System (HMIS) delivery register book number 12 (MTUHA book number 12).

3.3 Study population

The study population was all post natal mothers who delivered at Mbeya Zonal Referral Hospital and admitted in post natal ward. The post natal mothers were interviewed from 15th May, 2017 to 15th June, 2017

3.4 Sample size

The Sample size was be estimated by using formula (Naing, Winn, & Rusli, 2006).

$$N = \frac{Z^2 P (100\% - P)}{d^2}$$

Where by:

N –Required sample size

Z–1.96 for statistical level of confidence at 95%

P– Proportion of CS for Referral Hospital in Tanzania is 35.5% (Worjolah et al., 2012)

d –5% (0.05) Marginal error will be used

$$N = \frac{1.96^2 \times (100\% - 35.5\%)}{5\%^2}$$

N=352

Adjusted sample due to non-response

$$n' = \frac{n \times 100\%}{100\% - f\%}$$

Where by:

n' = non response sample size

n = sample size

f = adjusted sample is 10%

$n' = 391$

The total of 400 post natal mothers was interviewed.

3.5 Sampling technique

Participants were selected from Post natal ward in Mbeya Zonal Referral Hospital through simple random sampling. All post natal mothers waiting for discharge had equal chance to be selected in the study. The pieces of paper with number 1 to 20 were prepared and mixed thorough in a bowl, each woman in post natal mother were asked to pick one piece of paper. Women who picked a piece of paper with number 1 to 10 were included in the study and who to picked 11 to 20 were excluded in the study.

3.6 Inclusion criteria

All post natal mothers who have delivered.

3.7 Exclusion criteria

Women who are very sick and mothers who lost their babies were excluded; also women who are cognitively impaired, delivered before arriving at the hospital (BBA – Born before Arrival) and home deliveries were excluded.

3.8 Data collection

The clients data were obtained through review of client's records and interview using structured questionnaire in Swahili version (Appendix II) which was translated from English version (Appendix I) constructed by the researcher.

All women in post natal ward were randomly selected and interviewed by using structured questionnaire to acquire their socio demographic characteristics, obstetric and non obstetrics factors associated to caesarean sections. Other information was acquired from patient's file such as medical conditions and indication for caesarean section.

The questionnaire included demographic data, maternal characteristic such as parity, gestational age at delivery, mode of delivery, indications of CS, obstetrical and non obstetrical factors of caesarean delivery. Indications of CS including cephalopelvic disproportion (CPD), prolonged labour, placenta praevia, placental abruption, cardiac disease, malpresentation, foetal distress, macrosomia and multiple foetuses. Obstetrical factors included parity, co-morbid illness, gestation age of delivery and foetal birth weight. Non obstetrical factors included maternal request of CS, preference on the mode of delivery, perceived safety and interpersonal influence, time and day of delivery.

3.9 Pilot of the study

The pilot study to pre-test the questionnaire was conducted at MZRH, 35 post natal mothers were interviewed to determine the readability, clarity and range of responses. The questions were modified.

3.10 Validity and Reliability of the tool

Validity

The questionnaire was reviewed by midwife, obstetrician and statistician experts to check for content validity of the tool. The experts asked to review each question to measure if will answer the research objectives. The feedback from each expert were analyzed and compared to determine the degree of content validity from each question, and then informed decisions will be made to improve the effectiveness of each question.

Reliability

Reliability of the tool was checked by using SPSS statistical software to calculate Cronbach's alpha of which 0.5 is the minimum acceptable level for the reliable tool. The reliability coefficient of this study was 0.521 indicating the tool is reliable.

3.11 Training of research assistants

Prior to data collection, two research assistants were trained for one day on how to collect data accurately and consistently so as to avoid biases and errors. The research assistants were data clerk and assistant nursing officer who are experienced in data collection.

3.12 Data Management

Control of data quality was achieved through effective training of research assistants on standardized data collection tool, also the collected data were reviewed in the field before leaving the site. All incomplete and missing data were identified and rectified by the researcher through revisiting and interviewing the respondent. All collected information was kept confidential.

3.13 Data analysis

Collected data were coded, entered, cleaned to remove inconsistency. Data were analyzed by SPSS software version 21. Univariate analysis was used to summarize single variables using frequency distributions and pie chart while bivariate analysis was used to establish associations between factors associated with CS delivery and mode of delivery. Multivariate analysis using binary logistic regression was used to identify predictors of caesarean section deliveries. P value of less than 0.05 was considered to be statistical significant.

3.14 Ethical consideration

Written informed consent was used to obtain consent from all participants before recruiting them in the study to ensure voluntary participation. The mothers were also informed that, some of their information was acquired from the file. All data were coded, questionnaires were identified by numbers and privacy was maintained during data collection to achieve confidentiality.

Women were interviewed after delivery either vaginal or caesarean section delivery. To minimize the risks of discomfort to participants, the interview was conducted only when their condition was good and ready to be discharged.

Ethical clearance was acquired from Muhimbili University of Health and Allied Science (MUHAS) Institutional Review Board (IRB) (Appendix III) and permission to conduct the study at Mbeya Zonal Referral Hospital was acquired from Mbeya Medical Research and Ethics Committee (MMREC), (Appendix IV).

CHAPTER FOUR

4.0 PRESENTATION OF RESEARCH FINDINGS AND DATA ANALYSIS

This section describes the study findings. The description of socio demographic characteristics of respondents are presented first followed by independent variables which are obstetrics and non obstetrics factors associated with caesarean section deliveries. The associations between independent variables with mode of delivery are described by using Pearson Chi square test. The logistic binary regression model is used to estimate the impact of independent variables on CS.

4.1 Socio-Demographic Characteristics

A total of 400 respondents were interviewed and their age ranged from 15 to 43 years with the mean age of 26.81 years (SD: 6.338).

Table 1: Demographic distribution of the study population (N = 400)

Demographic distribution	Frequency	Percentage
<i>Age groups</i>		
15 – 24	162	40.5
25 – 34	182	45.5
35 – 44	56	14.0
<i>Education level</i>		
No formal education	26	6.5
Primary education	154	38.5
Secondary education	168	42.0
College and above	42	13.0
<i>Occupation status</i>		
Employed	221	55.25
Petty business	69	17.25
Unemployed	110	27.5
<i>Current marital status</i>		
Married**	355	88.75
Not Married*	45	11.25
<i>Admission category</i>		
Institutional Referral	74	18.5
Self Referral	326	81.5
<i>Payment category</i>		
NHIF	384	1.75
Cash	9	2.25
IPPM	7	96

**Married or Cohabiting; *Single, Divorced, Separated

The majority of respondents 182 (45.5%) aged between 25 and 34, About 168 (42%) had secondary education, and 290 (72.5%) were employed, majority of mothers 355 (88.75%) were married. Also majority of mothers about 326 (81.5%) came direct from home (self referral) and few about 74 (18.5%) were referred from lower level hospitals. On payment category majority of mothers about 384(96%) were using National Health Insurance Fund (NHIF), 9 (2.25%) cash were using and 7 (1.75%) were under Intramural Private Practice Mbeya (IPPM) / (Fast track).

Table 2: Antenatal Clinic attendance (N = 400)

ANC Attendance	Frequency	Percentage
<i>Attendance</i>		
Attended	400	100.0
Not Attended	0	0.0
<i>Number of visits</i>		
1 – 3	161	40.3
4 – 6	230	57.5
7 +	9	2.3
<i>GA at first visit</i>		
4 – 12	91	22.8
13 – 24	255	63.8
25 – 36	54	13.5
<i>Attended Private ANC</i>		
Attended	50	12.5
Not Attended	350	87.5
<i>Attended by her special doctor</i>		
Yes	21	5.3
No	379	94.8

All women reported to attend ANC clinic with mean number of visits of 3.9 (SD =1.236) and the mean of gestational age at first booking is 18 weeks (SD = 6.365). Also 50 (12.5%) of women were attending private clinic and 21 (5.3%) of women were attended by special doctors when admitted for delivery.

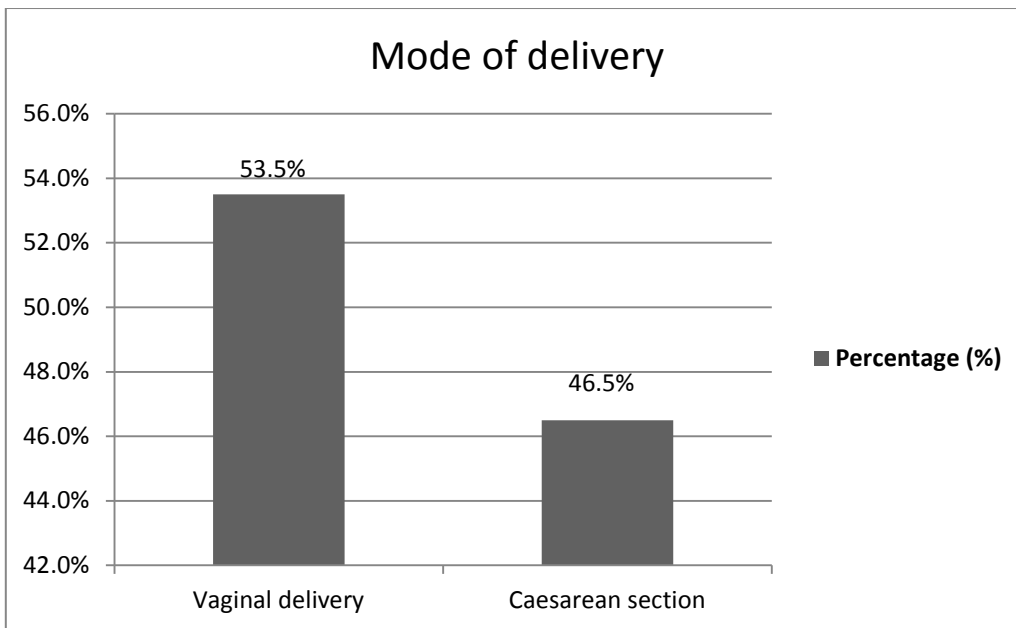


Figure 2: Rate of caesarean section

The rate of caesarean section among 400 postnatal mothers was 186 (46.5%).

Table 3: The rate of CS by demographic distribution

Demographic distribution	n	Rate of CS (%)	P – Value
<i>Age groups</i>			
15-24	162	67 (41.4)	0.00027
25-34	182	79 (43.4)	
35-44	56	40 (71.4)	
<i>Education</i>			
No formal Education	26	15 (57.7)	0.172
Primary Education	154	69 (44.8)	
Secondary Education	168	72 (42.9)	
College and Above	52	30 (57.7)	
<i>Employment status</i>			
Employed	69	41 (59.4)	≤ 0.05
Petty business	221	99 (44.8)	
Unemployed	110	46 (41.8)	
<i>Marital Status</i>			
Married	355	157 (44.2)	0.010
Not Married	45	29 (64.4)	
<i>Admission Category</i>			
Self Referral	326	143 (43.9)	0.027
Institutional Referral	74	43 (58.1)	
<i>Payment category</i>			
NHIF	384	174 (45.3)	0.014
Cash	9	5 (55.5)	
IPPM	7	7 (100)	

The results show that the rate of caesarean section varies with demographic distribution of mothers; maternal age, employment status, marital status, admission and payment category are significant factors for CS deliveries ($P < 0.05$). However the education level of mothers was not significant factor for CS ($P > 0.05$).

4.2 Obstetrics factors associated with caesarean section

Table 4: Obstetric factors; maternal height, parity, GA during delivery, birth weight and Apgar score of infants (N = 400)

Factor	Frequency	Percentage (%)
<i>Height</i>		
Below 150	37	9.3
150 and Above	363	90.8
<i>Parity</i>		
1 – 3	333	83.3
4+	67	16.8
<i>GA during delivery</i>		
28 to 36	119	29.8
37 to 42	281	70.3
<i>Number of Newborn delivered</i>		
Single	396	99.0
Twins	4	1.0
<i>Birth weight of the newborn</i>		
Below 2.5 kg	46	11.5
2.5 kg and above	354	88.5
<i>Apgar Score of the newborn</i>		
7 to 10	381	95.3
4 to 6	15	3.7
0 to 3	4	1.0
<i>Co-morbid medical conditions</i>		
None	361	90
PIH	16	4
Pre-eclampsia & eclampsia	4	1
Genital warts	7	2
HIV/AIDS	12	3

The mean height of respondents was 153.53cm (SD=3.856), the mean parity status of women was 2.34 (SD=1.464), the mean gestational age during delivery was 37.37 weeks (SD=1.867), birth weight of baby was 3.02 Kg (SD=0.5714) and majority of the baby 381 (95.3%) had an Apgar score of 7 -10.

On underlying medical conditions prior delivery; 361 (90%) women had no co-morbid conditions while other reported to have Co-morbid medical conditions such as PIH 16 (4%), pre-eclampsia & eclampsia 4 (1%), HIV/AIDS 12 (3%) and Infections 7 (2).

4.3 Bivariate analysis of obstetric factors associated with caesarean section deliveries

Cross tabulation of obstetric factors and mode of delivery using chi-square was conducted to establish the association, P – value was set to be statistical significant at cut of point of 0.05.

Table 5: Association between obstetric factors and mode of delivery

Variable	Mode of delivery		Total	Chi square (χ^2)	P-value
	Vaginal delivery (%)	Caesarean section (%)			
<i>Age</i>					
15 to 24	95 (58.6)	67 (41.4)	162	16.410	0.000273
25 to 34	103 (56.6)	79 (43.4)	182		
35 to 44	16 (28.6)	40 (71.4)	56		
<i>Height</i>					
Below 150	19 (51.4)	18 (48.6)	37	0.076	0.783
150 and Above	195 (53.7)	168 (46.3)	363		
<i>Parity</i>					
1 – 3	187 (56.2)	146 (43.8)	333	5.638	0.018
4+	27 (40.3)	40 (59.7)	67		
<i>GA during delivery</i>					
28 to 36	72 (57.1)	54 (42.9)	126	0.981	0.322
37 to 42	142 (51.8)	132 (48.2)	274		
<i>Number of Newborn delivered</i>					
Single	212 (53.5)	184 (46.5)	396	0.20	0.888
Twins	2 (50)	2 (50)	4		
<i>Birth weight of the newborn</i>					
Below 2.5 kg	21 (38.2)	34 (61.8)	55	6.015	0.014
2.5 kg and above	193 (55.9)	152 (44.1)	345		
<i>APGAR Score of the newborn</i>					
7 to 10	206 (54.1)	175 (45.9)	381	1.168	0.558
4 to 6	6 (66.7)	9 (33.3)	15		
0 to 3	2 (50)	2 (50)	4		
<i>Co-morbid conditions</i>					
PIH	1 (6.3)	15 (93.8)	16	< 0.001	
Pre-eclampsia & Eclampsia	0 (0.0)	4 (100.0)	4		
Maternal Infections (Genital warts)	0 (0.0)	7 (100.0)	7		
HIV/AIDS	7 (58.3)	4 (41.7)	12	> 0.05	
<i>Number of ANC visits</i>					
1 to 3	82 (53.6)	71 (46.4)	153	37.713	< 0.001
4 to 6	128 (62.1)	78 (37.9)	206		
7 +	4 (9.8)	37 (90.2)	41		

The results show that the increase of caesarean section rate is associated with obstetric factors, the factors which are statistical significant are; increase of maternal age ($\chi^2 = 16.410$, $df = 2$, $P < 0.001$), extreme maternal age / below 18 and above 35 years ($\chi^2 = 41.149$, $df = 1$, $P < 0.001$), increase in parity ($\chi^2 = 5.638$, $df = 1$, $P < 0.05$), extreme birth weight of below 2.5 kg and above 4.0 kg ($\chi^2 = 6.015$, $df = 1$, $P < 0.05$), co morbid medical conditions such as PIH, pre-eclampsia, eclampsia and maternal infections ($P < 0.0001$) and increase number ANC elective CS ($\chi^2 = 37.713$, $df = 2$, $P < 0.001$).

Other obstetric factors are not statistical significant such as; maternal ($\chi^2 = 0.076$, $df = 1$, $P > 0.05$), gestation age during delivery ($\chi^2 = 0.981$, $df = 1$, $P > 0.05$), APGAR score of the newborn ($\chi^2 = 1.168$, $df = 2$, $P > 0.05$), number foetuses delivered ($\chi^2 = 0.20$, $df = 1$, $P > 0.05$) and HIV/AIDS was not statistical significant ($P > 0.05$).

4.4 Indications of caesarean section delivery

This section comprise description of following is made; types of CS, number of CS done, indications of CS and client's satisfaction of the procedure.

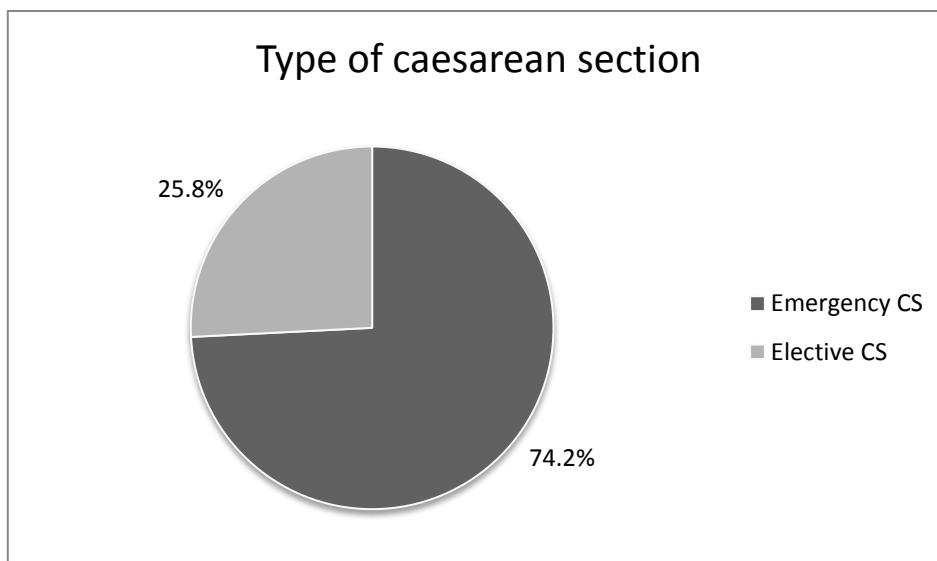


Figure 3: Type of caesarean section

The majority of caesarean section conducted were emergency CS which accounted for 138 (74.2) while 48 (25.8) were elective caesarean section.

Table 6: Number of caesarean section done

Number of CS	Frequency	Percentage (%)
1	117	62.9
2	60	32.3
3	8	4.3
4	1	0.5
Total	186	100.0

The majority of caesarean section conducted were primary CS about 124 (62.9%) and 69 (37.1%) were repeat caesarean section.

Table 7: Indication of caesarean section (N = 186)

Indications	Frequency	Percentage (%)
Previous scar	69	37.1
Cephalo-Pelvic Disproportional (CPD)	35	18.8
Non reassuring foetal status (foetal distress)	22	11.8
Malpresentation	22	10.7
PIH	16	8.6
Prolonged labour	15	8.1
Genital warts (Maternal infection)	7	3.8
Bad Obstetric History	6	3.2
Pre-eclampsia & Eclampsia	4	2.1
Cord around the neck	2	1.1
Polyhydromnious	1	0.5
Cancer of the cervix	1	0.5
Calcified placenta	1	0.5

The leading indications of CS were previous scar 69 (37.1%), CPD 35 (18.8%), foetal distress 22 (11.8%), malpresentation 22 (10.7%), PIH 16 (8.6%) and prolonged labour 15 (8.1%).

Table 8: Client satisfaction on CS decision

Client satisfaction	Frequency	Percentage (%)
<i>Information on benefits & Risks of CS</i>		
Yes	27	14.5
No	159	85.5
<i>Understood all information</i>		
Yes	23	12.4
No	163	87.6
<i>Had opportunity to ask questions</i>		
Yes	21	11.3
No	165	88.7
<i>Information help to consent for CS</i>		
Yes	27	14.5
No	159	85.5
<i>Satisfied with decision of CS delivery</i>		
Yes	181	97.3
No	5	2.7

Prior consenting for CS, most of clients of about 159 (85.5%) were not given enough information on risks and benefits of CS and didn't understand what they were told, however 181 (97.5%) of the women were satisfied with the decision of undergoing CS.

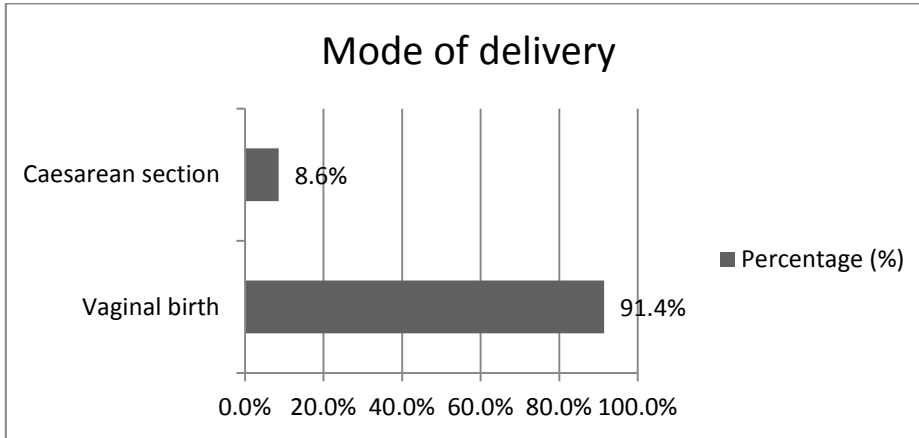


Figure 4: Desire for future vaginal birth after caesarean section (VBAC)

Majority of women about 170 (91.4%) desire for vaginal delivery after undergoing caesarean section.

4.5 Non obstetric factors associate with caesarean section deliveries

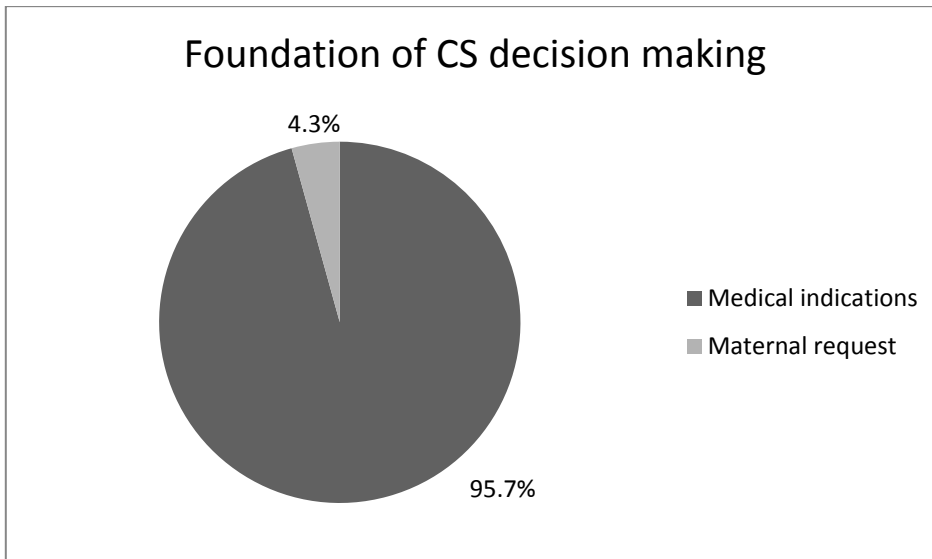


Figure 5: Foundation of CS decision making

Most of caesarean section about 178 (95.7%) conducted under medical indication and only 8 (4.3%) were due to maternal request.

4.6 Bivariate analysis of non obstetric factors associated with caesarean section deliveries

Cross tabulation of non obstetric factors and mode of delivery using chi-square was conducted to establish the association, P – value was set to be statistical significant at cut of point of 0.05.

Table 9: Association between non obstetric factors and mode of delivery

Variable	Mode of delivery		Total	Chi square (χ^2)	P-value
	Vaginal delivery (%)	Caesarean section (%)			
<i>Time of delivery</i>					
Day time	164 (51.6)	154 (48.4)	318	2.317	0.128
Night time	50 (61)	32 (39)	82		
<i>Day of delivery</i>					
Weekdays	171 (53.9)	146 (46.1)	317	0.121	0.728
Weekend	43 (51.8)	40 (48.2)	83		
<i>Marital status</i>					
Married	198 (55.8)	157 (44.2)	355	6.563	0.010
Not married	16 (35.6)	29 (64.4)	45		
<i>Payment category</i>					
Cash	4 (44.4)	5 (55.6)	9	8.568	0.014
NHIF	210 (54.7)	174 (45.3)	384		
IPPM	0 (0.0)	7 (100.0)	7		
<i>Employment status</i>					
Employed	28 (40.6)	41 (59.4)	69	5.857	005
Small business	122 (55.2)	99 (44.8)	221		
Unemployed	64 (58.2)	46 (41.8)	110		
<i>Education level</i>					
No formal Education	11 (42.3)	15 (57.7)	26	5.002	0.172
Primary Education	85 (55.2)	69 (44.8)	154		
Secondary Education	86 (57.1)	72 (42.9)	168		
College and Above	12 (28.8)	30 (71.4)	42		

The results show that the increase of caesarean section rate is associated with non obstetric factors, the factors which are statistical significant are; marital status, CS rate is higher among unmarried women ($\chi^2 = 6.563$, $df = 1$, $P < 0.05$), CS rate is higher among women with high economic status under fast track ($\chi^2 = 8.568$, $df = 2$, $P < 0.05$) and women who are employed ($\chi^2 = 5.857$, $df = 3$, $P \leq 0.053$).

The other factors were not statistical significant such as; time of delivery ($\chi^2 = 2.317$ $df = 1$, $P > 0.05$), day of delivery ($\chi^2 = 0.121$ $df = 1$, $P > 0.05$) and education level ($\chi^2 = 5.002$ $df = 3$, $P > 0.05$)

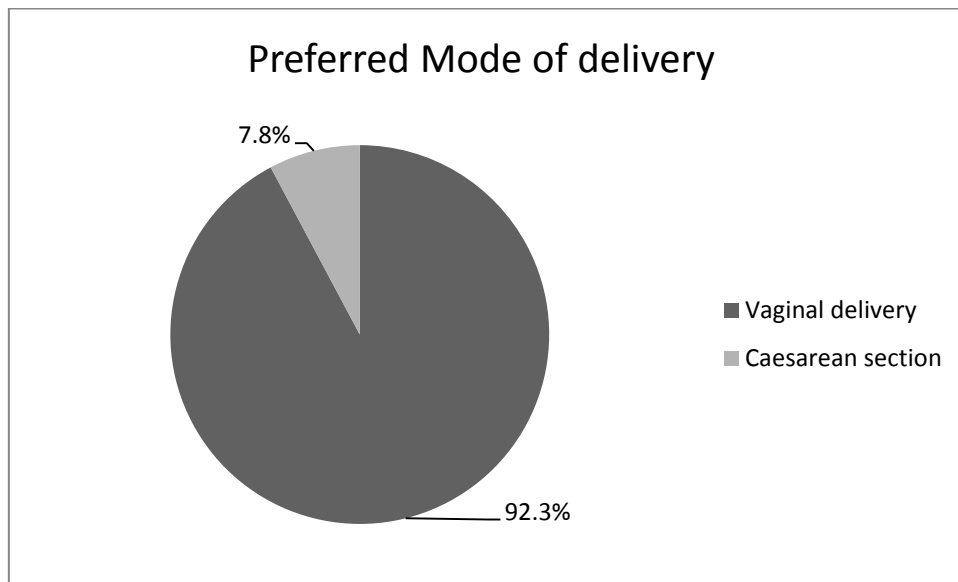


Figure 6: Preferred mode of delivery

On the preference on mode of delivery, majority of women about 369 (92.3%) preferred to deliver by caesarean section while 31 (7.8) prefer caesarean section delivery

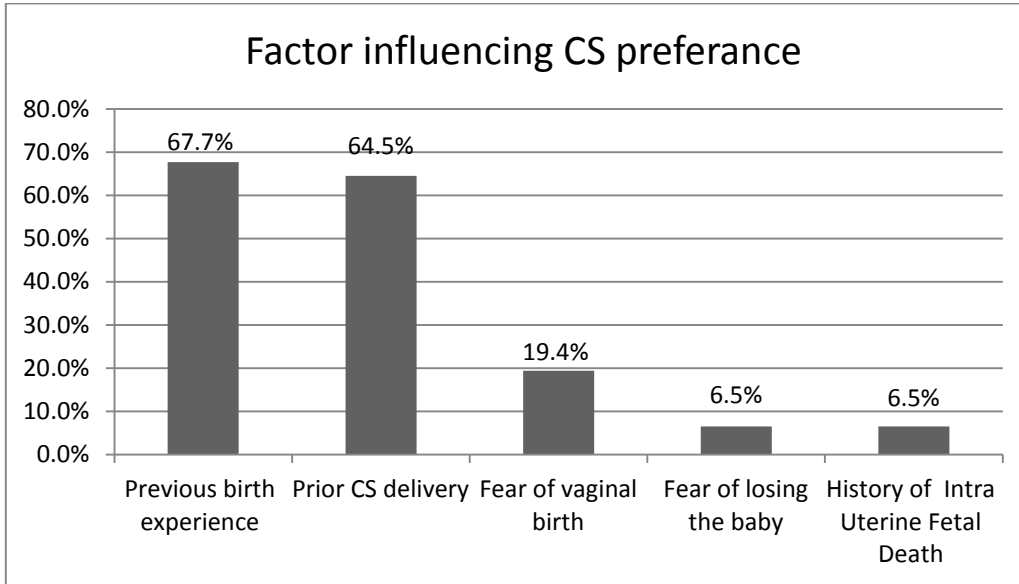


Figure 7: Factor Influenced Caesarean Section delivery preference

The factor which influenced women to prefer caesarean section delivery are; previous birth experience 21 (67.7%), prior CS delivery 20 (64.5%), Fear of vaginal birth 6 (19.4%), fear of losing the baby 2 (6.5%) and having history of Intra Uterine Foetal Death (IUFD) 2 (6.5%).

Table 10: Individuals influencing choice of delivery among women

Influencing people	Frequency	Percentage (%)
Individual choice	342	85.5
Health care provider	222	55.5
Friends	90	22.5
Relatives	14	3.5
Partner	10	2.5
Colleagues	1	0.25

Majority of women about 342 (85.5%) reported to have individual choice of mode of delivery, 222 (55.5%) are influenced by health care provider, 90 (22.5%) influenced by friends and the rest were influenced by relatives, partners and friends.

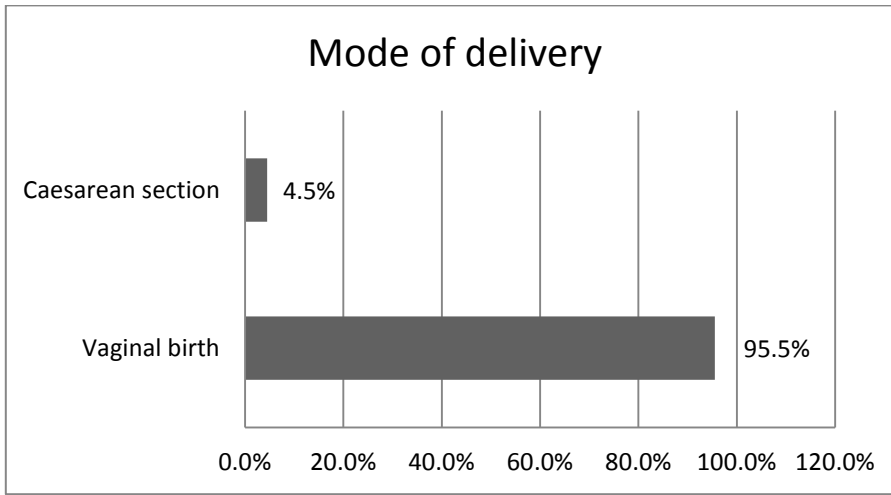


Figure 8: Perceived safety

Few women about 18 (4.5%) perceived caesarean section as safe mode of delivery while the majority 382 (95.5%) perceive vaginal birth as the safe mode of delivery.

Table 11: Reason for perceiving CS as the safe mode of delivery

Reasons for perceived safety of CS	Frequency	Percentage (%)
Reassurance of getting a live baby	13	72
No labour pain	3	17
CS prevents unnecessary neonate death	9	50

Participants perceive CS as the safe mode due to reassurance of getting a live baby, no labour pain and prevention of unnecessary neonate death

Table12: Reasons reported by participants which influence caesarean section deliveries

Factors of CS deliveries	Frequency	Percentage (%)
Fear of labour pain / vaginal birth	32	8.0
Desire for their vaginal to remain intact	32	8.0
Desire for the baby with high IQ	4	1.0
Lack of exercise and laziness during pregnancy	112	28.0
Health problems during pregnancy	119	29.8
Prevention of neonatal death during delivery	36	9.0
Use of herbs	1	0.3
Use of contraceptives	20	5.0
Teenage pregnancy	14	3.5
Prevention of transmission of infection to infant.	5	1.3
Obesity	45	11.3
Influence of Health Care Provider	7	1.8
Fear of losing the babies	1	0.3
Desire to deliver few babies	2	0.5

Participants had reported several factors which influences increase of caesarean section deliveries such as fear of labour pain / vaginal birth 32 (8%), desire for their vaginal to remain intact 32 (8%), desire for the baby with high IQ 4(1%), lack of exercise and laziness during pregnancy 112 (28%), health problems during pregnancy 36 (9%), prevention of neonatal death during delivery 36 (9%), Use of herbs 1 (0.3), use of contraceptives 20(5%), teenage pregnancy 14 (3.5%), prevention of transmission of infection to neonates 5 (1.3%), obesity 45 (11.3%), influence of Health Care Provider 7 (1.8%), Fear of losing the babies 1 (0.3) and desire to deliver few babies 2 (0.5%)

Table 13: Logistic regression on factors associate with Caesarean Section

Factor	Crude OR	95% CI	P –Value	Adjusted OR	95% CI	P – Value
Maternal age	5.296	3.086 – 9.091	0.0000	4.456	2.404 – 8.258	0.000
Occupation	0.982	0.782 – 1.232	0.873	2.303	1.135 – 4.672	0.021
Birth weight	0.271	0.271– 0.872	0.016	1.564	0.798 – 3.066	0.193
Parity	0.527	0.309 – 0.899	0.019	1.006	0.508 – 1.991	0.986
Marital status	0.437	0.229 – 0.834	0.012	0.367	0.173 – 0.780	0.009
Number of ANC visits	0.066	0.023 – 0.192	0.000	0.071	0.029 – 0.029	0.000
Payment category	2.170	0.752 – 6.260	0.152	0.000	0.000	0.999
Time of delivery	0.682	0.415 – 1.118	0.129	1.774	0.980 – 3.212	0.058

For identifying true predictors of CS, logistic binary regression model by using Hosmer and Lemeshow Test was done. Women with extreme age (below 18 years and above 35 years) were 4 times likely to deliver by CS (AOR = 4.456, 95% CI: 2.404 – 8.258, $P < 0.001$), also employed women were 2 times likely to delivery by CS (AOR = 2.303, 95% CI: 1.135 – 4.6721, $P < 0.05$), other factors like extreme birth weight (AOR = 1.564, 95% CI: 0.798 – 3.066) and high parity (AOR = 1.006, 95% CI: 0.508 – 1.991) show the risk of caesarean section deliver although was not statistical significant ($P > 0.05$). Other factors didn't show the risk of CS deliver and were not statistical significant.

CHAPTER FIVE

5.0 DISCUSSION

This study aimed at assessing factors associated with caesarean section deliveries which are obstetric factors and non obstetrics factors. Among 400 post natal mothers who were interviewed 186 (46.5%) delivered by caesarean section.

Obstetric factors associated with caesarean section deliveries were as follows;

The results revealed that rate of caesarean section increase with increase in age, from 41% in age group 15 to 24 to 71% in age group of 34 to 44. This study can be comparable to the study conducted at MNH by (Muganyizi et al., 2008) which showed that the age group of 30 to 34 had highest risk of caesarean deliveries. Also is supported by another study conducted in UK which revealed that the risk of caesarean section is increasing with maternal age (Black et al., 2005). Pregnancy in older adults is accompanied with the risks such as; pre term births, pregnancy induced hypertension, pre –eclampsia, foetus with genetic abnormalities, these risks predispose them to caesarean section delivery.

Moreover this study showed the risk of caesarean section delivery is four times higher in women aged below 18 and above 35 years. Also the results shows that, the rate of caesarean section for under 18 is very high about 93.3% ($P < 0.001$), this is due to the risks of premature labour, low birth weight, pregnancy induced hypertension, poor progress of labour and social consequences increases the risks of caesarean section delivery.

Another factor is parity which shows that the caesarean delivery rate increases with parity, mothers who are para four and above have high rate of caesarean section. High parity has been associated with pregnancy complications which predispose women to caesarean section delivery. This study is also comparable to the study conducted at MNH by (Muganyizi et al., 2008) which shows nulliparous mothers have lowest caesarean section rates while those with previous caesarean deliveries have more than double risk of delivering by caesarean section.

Another obstetric factor is birth weight; findings showed that the rate of caesarean section increases with increase extreme birth weight (below 2.5 kg and above 4.0 kg) the rate is 62% while normal birth weight of 2.4 kg to 4.0 kg the rate is 44%. The study is related to the study conducted in Oman by (Busaidi et al., 2012) which shows that extremes of neonatal birth weight (<2.50 kg and ≥ 4.00 kg) were positively associated with caesarean section delivery. Also the study by (Yoshioka-Maeda et al., 2016) revealed that women delivering babies with low birth weight are at high risks of caesarean deliveries which can be contributed by adverse conditions like pregnancy induced hypertension and pre-term birth. Moreover is supported by the study conducted in Lagos by (Olusanya et al., 2016) which showed low birth weight is associated with the risk of caesarean delivery.

The results show that gestation age during delivery, maternal height and Apgar score of the newborn had no significant in associating with caesarean delivery. This study is in contrast with the study by (Yoshioka-Maeda et al., 2016) which showed that mothers with height below 150 cm are at risk of caesarean section deliveries. However this study had few participants with maternal height below 150cm, mean height of respondents was 153.53cm.

Another factor is co-morbid illness which is associated with high risks of caesarean deliveries such pregnancy Induced Hypertension (PIH) 93.8%, pre-eclampsia / eclampsia 100%, genital warts 100%, however HIV/AIDS had low contributions to caesarean section deliveries of about 41.7%. The co morbid illness is explained by large number of caesarean deliveries as almost 95.7% of were under medical indications; the co-morbid illness has been associated with pregnancy and labour complications which increases the risks of caesarean deliveries.

Furthermore, the results show that increase of caesarean section rate is associated with increased number of ante natal visits ($P < 0.001$), the higher rate was elective caesarean section as compared to emergency caesarean section ($P < 0.001$). This explains that co-morbid illness contributed to many caesarean section deliveries as high risks pregnancy were closely observed by nurse and midwives hence had many ante natal visits.

Indications of caesarean section deliveries were as follows;

Majority of caesarean section conducted were emergency and accounted for 138 (74.2%) while elective caesarean sections were 48 (25.8%). This study is similar to the study conducted at MNH, which revealed that majority of caesarean section deliveries were by emergency caesarean section which indicates that some women could have been delivered by elective caesarean section (Mdegela et al., 2012). This also explains the reason why 95.7% of caesarean section was conducted under medical indication while 4.3% were under maternal request however was medically justified.

The leading indications of CS were previous scar 69 (37.1%), CPD 35 (18.8%), foetal distress 22 (11.8%), PIH/Pre-eclampsia 20 (10.8%), malpresentation 22 (10.7%) and prolonged labour 15 (8.1%) , this study is corroborates with the study conducted in Sub Saharan by (Kathyrin-Chu et al., 2016) which revealed that; the most common indications of caesarean deliveries includes; obstructed labour (31%), malpresentation (18%), previous Caesarean section (14%) and foetal distress (10%), uterine rupture (9%) pre- eclampsia/eclampsia and ante partum haemorrhage.

The non obstetric factors associated with caesarean deliveries include the following;

Socio economic status which is explained by category of payment and occupation which reveals that the rate of caesarean section is higher among women with high socio economic status as the rate for IPPM/fast track category of payment was 100% and employed women 59% compared to other category of payment and employment status. This can be compared with Tanzania Demographic and Health Survey, 2016 which shows that women with high socio economic status are eight times likely to deliver by caesarean section.

It is observed that the rate of caesarean section is higher among single women (61%) than married women (45%). This can explain that social and economic support from the partners reduces risks of caesarean section delivery. However the study is in contrast with the study by (Inyang-Otu, 2014) revealed that there is no statistical significance in association between marital status and mode of delivery.

Another factor is maternal request and preference. The study reveals that very few women about 8 (4.3%) request caesarean section as well as very few preferred 31 (7.8%) caesarean section delivery. This is similar to the study conducted in Italy which shows 6.4% preferred caesarean delivery while majority preferred vaginal birth (Gamble, Health, & Creedy, 2001), also is supported by the study conducted in Dar es salaam which shows that majority of women preferred vaginal birth (Litorp, 2015). Furthermore the study revealed that majority of women about 170 (91.4%) has desire for vaginal delivery after undergoing caesarean section. Most women prefer and desire vaginal birth because it is natural process with fewer complications and are healed within short time compared to caesarean section delivery.

Among few women who preferred caesarean deliveries they are influenced previous birth experience, prior caesarean section delivery, fear of vaginal birth, fear of losing the baby and having history of Intra Uterine Foetal Death (IUFD). These factors have been attributed by influence of friends, health care provider and relatives and previous birth experience which influences them to have favourable attitude towards caesarean section deliveries.

Also majority of women about 85.5% reported to have individual choice on the mode of delivery, 55.5% are influenced by health care provider, 22.5% influenced by friends and the rest were influenced by relatives, partners and friends. Hence health care provider plays the major role in influencing women on the mode of delivery. This study is supported by the study done by (Litorp, 2015) which reveals that health care provider has emphasis in counselling women on mode of delivery especially caesarean section.

Moreover few women about 18 (4.5%) perceived caesarean section as safe mode of delivery. The reason for their perception is related to their previous birth experience such as; reassurance of getting a live baby and prevention of unnecessary neonate death.

Moreover the factors associated with caesarean delivery explored from women were such as fear of labour pain / vaginal birth this is supported by the study by (Storksen et al., 2001) which reveals that fear of vaginal birth and previous birth experience contributes to caesarean delivery. Also other explored factors were desire for their vaginal to remain intact (concern on

sexual practices), desire for the baby with high IQ, lack of exercise and laziness during pregnancy, Health problems during pregnancy, Prevention of neonatal death during delivery, Use of herbs, Use of contraceptives, teenage pregnancy, Prevention of transmission of infection and diseases to infant during delivery, Obesity, Influence of Health Care Provider, fear of losing the babies. The factors reported by women are due to their previous birth experience, interpersonal and social influence and perception of caesarean delivery with the community.

These factors are moderate similar to the study conducted by (Oguta, 2015) on psychosocial determinants of caesarean section delivery which are fear of child birth, concern on sexual function, also another comparable study revealed that previous negative birth experience, previous caesarean delivery, complicated pregnancy are associated with caesarean deliveries (Handelzalts, Fisher, Lurie, Shalev, & Golan, 2011)

According to the conceptual model guided this study on the determinants of caesarean section delivery. The study had identified that most of the obstetric factors such as maternal age, parity, and co-morbid medical illness had contributed to caesarean section deliveries and non obstetric factors involved economic status and social support and indications remained to be foetal and maternal indications.

5.1 Conclusion

The rate of caesarean section at Mbeya Zonal Referral hospital is relatively high. There is the need to reduce to the reasonable/optimum rate; this can be achieved by reducing unnecessary cesarean deliveries among women with low risks. Health care providers should be aware of the risks of unnecessary caesarean section as well as women should be fully informed on benefits and risks of caesarean section deliveries.

5.2 Study limitation and strength

Study limitation

The study was conducted in public referral hospital only which might miss some of the non obstetric factors in private hospitals. The results may not be generalized to other settings of lower level and general population.

Missing some information which was acquired from patients records such as maternal height, birth weight, Apgar score and gestation age during delivery.

Strength

The rate of caesarean section in Tanzania is 6% and the rate of caesarean section at Mbeya Zonal Referral Hospital is 46.5%. This was the appropriate setting to assess factors associated with caesarean section. Also due to limited published studies conducted at Mbeya Zonal Referral Hospital, this study is the foundation for other studies to be conducted.

5.3 Recommendations

The study shows that caesarean section deliveries have been largely contributed by medical indications whereby leading indication was previous scar, so prevention of unnecessary primary caesarean section may reduce caesarean section deliveries; also maternal age and parity are factors which mainly contributed to caesarean section delivery however majority of women prefers vaginal delivery even after caesarean section. This may enhance conducting safe vaginal birth after caesarean section. To improve the practice of conducting caesarean section the following is recommended.

1. Ministry of Health, Community Development, Gender, Elderly and Children may incorporate the Midwives Model of Care in Reproductive and Child Health (ANC and Post partum care) services which focuses holistically on the well being of the mother throughout the pregnancy and postpartum as emphasis natural birth and reduces the number of high risk pregnancies and the need for caesarean section.

2. Ministry of Health, Community Development, Gender, Elderly and Children may consider strengthening family planning services to increase coverage and emphasis on youth friendly reproductive health services; this will reduce high parity and teenage pregnancy and hence reduce caesarean section deliveries.
3. Ministry of Health, Community Development, Gender, Elderly and Children - Training department should advocate to incorporated midwifery care model in medical and nursing training at all levels to ensure students are well prepared to provide holistic care to pregnant women.
4. Mbeya Zonal Referral Hospital should develop and operationalise guideline for safe conduct of vaginal birth after caesarean section as leading indication for CS is previous scar.
5. Mbeya Zonal Referral Hospital management should consider regular coaching of staff on appropriate foetal monitoring.
6. Mbeya Zonal Referral Hospital management may plan to conduct audit for caesarean section.
7. Health Care Provider (Midwives and Doctors) should provide psychological support to women throughout pregnancy until delivery and emphasis on natural birth.

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APPENDICES

Appendix I: Questionnaire – English Version

Factors associated with caesarean section delivery among women delivering at Mbeya Zonal Referral Hospital

Identification Number

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Part 1: Demographic Data (tick \checkmark in the box the appropriate answer)

1. What is your age? _____

2. What is your level of education?

- 1) No formal education
- 2) Primary
- 3) Secondary
- 4) College or University

3. What is your occupation?

- 1) Self employed
- 2) Employed
- 3) Medical Personnel
- 4) Unemployed

4. What is your marital status?

- 1) Married
- 2) Single
- 3) Divorced
- 4) Widow

5. Are you living with the father of the child or husband?

- 1) Yes
- 2) No

6. Category of admission

1) Referral

2) Self referral

7. Category of payment

1) Cash

2) NHIF

3) IPPM

4) Exemption

8. Did you attend Antenatal clinic?

1) Yes

2) No

9. If yes, how many visits did you attend ANC? (Check the ANC card) _____

10. What was the gestational age at first booking? (Check the ANC card) _____

11. Have you been attending ANC visits in private clinic?

1) Yes

2) No

12. Are you currently attended by your special doctor?

1) Yes

2) No

Part 2: Obstetric factors associated to caesarean sections Delivery (tick \checkmark in the box the appropriate answer)

13. Height of the mother (check ANC card) _____

14. What is your parity status? _____

15. What was the gestational age during delivery? (Check the file) _____

16. What was the birth weight of the newborn(s)? (Check the file) _____

17. APGAR score of the newborn (s) _____ (Check the file)

18. How many infant did you gave birth

- 1) Single tone foetus
- 2) Multiple foetuses

19. Did you have any medical conditions? (Check file & Records multiple responses)

- 1) None
- 2) Gestational Diabetes mellitus
- 3) Cardiac disease
- 4) Pregnancy induced hypertension
- 5) Pre – eclampsia /Eclampsia
- 6) HIV / AIDS
- 7) Infections
- 8) Others specify_____

20. What was your mode of delivery

- 1) Vaginal delivery
- 2) Caesarean section delivery

Part 3: Indications of caesarean section delivery

If you have delivered by caesarean section answer the following question;

21. When was CS planned

- 1) Before labour (Elective CS)
- 2) During labour (Emergency CS)

22. How many times have you undergone CS?

23. Before coming to hospital, what was the mode of delivery did you expect to deliver

1) Vaginal delivery

2) Caesarean section delivery

24. What was the foundation of decision making?

1) Medical indication

2) Maternal request

25. If medical indication, what was the indications of CS? (Check file)

26. Who made decision of conducting CS?

1) Health care provider

2) Client

3) Client's partner

4) Other _____

27. Did your doctor or midwife explain to you the benefits and risks of CS?

1) Yes

2) No

28. Did you understand all information?

1) Yes

2) No

29. Did you have opportunity to ask questions?

1) Yes

2) No

30. Did the information help you to consent for operation?

1) Yes

2) No

31. Were you satisfied with decision of caesarean section delivery?

- 1) Yes
- 2) No

32. Do you have desire for vaginal delivery after this caesarean section delivery?

- 1) Yes
- 2) No

Part 3: Non obstetric factors associated with caesarean section delivery (tick \checkmark in the box the appropriate answer)

33. What was the time of delivery? (Check file)

34. What was the day of delivery? e.g. (Monday, Saturday and Sunday)

35. Which mode of delivery was your best choice?

- 1) Vaginal delivery
- 2) Caesarean section

36. If your choice was CS, what influenced your decision? (Tick all that applies)

- 1) Previous birth experience
- 2) Fear of vaginal birth (ask why?)

- 3) Prior caesarean section delivery
- 4) Others _____

37. Who influenced your choice? (Tick all that applies)

- 1) Health care provider
- 2) Partner
- 3) Friends

- 4) Co- workers
 - 5) Relative
 - 6) Individuals choice
 - 7) Others _____
- | |
|--|
| |
| |
| |
| |

38. Which mode of delivery did you believe was safe for you and the baby?

- 1) Vaginal delivery
 - 2) Caesarean section
 - 3) None
- | |
|--|
| |
| |
| |

39. If you think CS is safe, why? _____

40. If you are advising a relative, friend or colleague on safe mode of delivery, which mode will you influence her to opt?

- 1) Vaginal delivery
 - 2) Caesarean section
- | |
|--|
| |
| |

41. What do you think causes women to deliver by caesarean section?

Appendix II: Dodoso - Swahili Version

Sababu Zinazopelekea Wakina Mama Kujifungua Kwa Njia ya Upasuaji katika Hospitali ya Rufaa Mbeya

Namba ya utambulisho

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Sehemu ya 1: Taarifa binafsi (weka alama ya Tiki (√) katika boksi la jibu ulilochagua)

1. Una umri gani? _____

2. Kiwango chako cha elimu?

- 1) Sijasoma
- 2) Elimu ya msingi
- 3) Elimu ya sekondari
- 4) Elimu ya juu - Chuo

3. Je, unafanya kazi gani?

- 1) Umejiajiri
- 2) Umeajiriwa
- 3) Mfanyakaziwa Afya
- 4) Sina kazi

4. Hali yako ya ndoa?

- 1) Umeolewa
- 2) Hujaolewa
- 3) Mtalaka
- 4) Mjane

5. Je unaishi na baba wa mtoto au mume wako?

- 1) Ndiyo
- 2) Hapana

6. Umekuja hapa hospitali ni kwa mfumo upi?

- 1) Rufaa (referral)

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- 2) Umetoka nyumbani (self referral)
7. Unalipia Huduma kwa mfumo gani
- 1) Unalipia fedha (cash)
- 2) Bima ya Afya
- 3) Huduma ya Haraka (IPPM)
- 4) Msamaha (Exemption)
8. Je ulihudhuria kliniki ya ujauzito (ANC)?
- 1) Ndiyo
- 2) Hapana
9. Kama ndiyo, ulihudhuria mara ngapi? (*Angalia Kadi ya Kliniki*) _____
10. Je, ulianza kliniki mimba ikiwa na wiki ngapi (GA)? (*Angalia Kadi ya Kliniki*)

11. Je ulikuwa unahudhuria kliniki ya binafsi kabla ya kujifungua?
- 1) Ndiyo
- 2) Hapana
12. Je kwa sasa hapa hospitalini, unahudumiwa na daktari wako maalumu?
- 1) Ndiyo
- 2) Hapana

Sehemu ya 2: Sababu za kiafya (obstetric factors) zinazosababisha kujifungua kwa njia ya upasuaji (Weka tiki ✓ katika boksi la jibu sahihi)

13. Urefu wako ni sentimita ngapi) (*Angalia Kadi ya Kliniki*)

14. Je, hii ni mimba ya ngapi?

15. Je, ulijifungua mimba ikiwa na umri gani (gestational age)? (*Angalia faili*)

16. Uzito wa mtoto / watoto: _____ (*Angalia faili*)

17. APGAR score ya mtoto: _____ (*Angalia faili*)

18. Umejifungua watoto wangapi?

- 1) Mmoja
- 2) Mapacha

19. Je ulikuwa na shida yoyote au ugonjwa wakati waujazito? (*Angalia faili, Jibu zaidi ya moja*)

- 1) Hapana
- 2) Kisukari (Diabetes mellitus)
- 3) Ugonjwa wa moyo
- 4) Shinikizo la damu wakati wa ujauzito (PIH)
- 5) Kifafa cha mimba (Pre – eclampsia / Eclampsia)
- 6) VVU / UKIMWI
- 7) Maambukizi ya mama
- 8) Nyinginezo_____

20. Je ulijifungua kwa njia gani

- 1) kawaida
- 2) Upasuaji

Sehemu ya 3: Sababu za kitaalamu (Indications) za kukufanyia upasuaji

(Weka tiki ✓ katika boksi la jibusahihi)

Kama ulijifungua kwa njia ya upasuaji, Jibu swali la 21 hadi 31

21. Je uamuzi wa kufanya upasuaji ulifanyika wakati gani

- 1) Wakati wa ujauzito (Elective)
- 2) Wakati uchungu umeanza (Emergency)

22. Ni mara ngapi umejifungua kwa njia ya upasuaji

23. Je, kabla hujaja hospitali ulitegemea utajifungua kwa njia gani?

- 1) Njia ya kawaida
- 2) Upasuaji

24. Je maamuzi ya kufanya upasuaji yalifanyika katika misingi ipi?

- 1) Matatizo ya ujauzito / uzazi (medical indication)
- 2) Uliomba kufanyiwa upasuaji (Maternal request)

25. Kama ilikuwa ni tatizo la ujauzito / uzazi, ni tatizo gani lililopelekea ufanyiwe upasuaji (indication of caesarean section)? (*Angalia faili*)

26. Nani alifanya maamuzi ya kufanya upasuaji?

- 1) Daktari au Mkunga
- 2) Wewe (Mteja)
- 3) Mwenzi wako / mume wako
- 4) Mwinginetaja _____

27. Je Mkunga au daktari alikueleza faida na hasara za kujifungua kwa njia ya upasuaji?

- 1) Ndiyo
- 2) Hapana

28. Je, ulielewa ulivyoielezwa na mkunga au daktari wako?

- 1) Ndiyo
- 2) Hapana

29. Je, ulipata nafasi ya kuuliza maswali?

- 1) Ndiyo
- 2) Hapana

30. Je, maelezo uliyopewa na mkunga au daktari wako yalikusaidia katika kukubaliana na maamuzi ya kufanyiwa upasuaji?

- 1) Ndiyo
- 2) Hapana

31. Je, uliridhika na maamuzi ya kufanyiwa upasuaji?

- 1) Ndiyo
- 2) Hapana

Sehemu ya 4: Sababu zisizo za kitalaamu (non obstetric factors) zinazo sababisha kujifungua kwa njia ya upasuaji (Weka tiki ✓ katicaboksi la jibusahihi)

32. Je ulijifungua saa ngapi? (*Angalia file, taja muda e.g. 09:45 AM*) _____

33. Ulijifungua siku gani? e.g. (Jumatatu, Jumamosi e.t.c) _____

34. Je, ulipendelea kujifungua kwa njia gani?

- 1) Kawaida
- 2) Upasuaji

35. Kama kwa njia ya upasuaji, Sababu gani ilipelekea maamuzi hayo (Jibu zaidi ya jibu moja)

- 1) Uzoefu wako wakujifungua mara ya mwisho
- 2) Unaogopa kujifungua kwa njia ya kawaida (Uliza kwanini)

-
- 3) Ulijifungua kwa upasuaji mara ya mwisho

4) Sababu nyingine _____

36. Nani alikushawishi katika maamuzi yako? (Jibu zaidi ya jibu moja)

- 1) Mfanyakaziwa afya
- 2) Mwenzi wako / Mume wako
- 3) Rafiki yako
- 4) Mfanyakazi mwenzako
- 5) Ndugu yako
- 6) Maamuzi yako binafsi

37. Je, unaamini ni njia gani ya kujifungua ilikuwa salama kwa mama na mtoto?

- 1) Kawaida
- 2) Upasuaji

38. Kama ninjia ya upasuaji, Kwanini unafiki njia hii ni salama?

39. Kama unamshauri ndugu, rafiki au mfanyakazi mwenzako kuhusu njia salama ya kujifungua ungemshauri ajifungue kwa njia ipi?

- 1) Kawaida
- 2) Upasuaji

40. Je, unafikirini mambo gani yanapelekea wanawake wengi kujifungua kwa njia ya upasuaji? _____

Appendix III: Informed Consent - English Version



MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED HEALTH SCIENCES
DIRECTORATE OF RESEARCH AND PUBLICATIONS

ID NO

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Greetings! My name is **SAMWEL MWANGOKA** I am a midwife student pursuing MSc. Midwifery and Women's health at Muhimbili University of Health and Allied Sciences. Currently conducting study on **Factors associated with caesarean section delivery among women delivering at Mbeya Zonal Referral Hospital in Mbeya Region.**

Purpose of study

To assess obstetrics and non obstetrics factors associated with caesarean section deliveries.

Sponsor:

Ministry of Health, Community Development, Gender, Elderly and Children

What participants involve

Your participation in the study will be at your own choice and you are free to decide without any adverse reactions. Participation will require you to answer questions in relation to factors contributing to caesarean section rates. It will take about 20 minutes to fill the questionnaire.

Confidentiality

All collected information will be kept confidential and this will be maintained by using codes and no names will be asked or required. Information collected on questionnaire will be entered into computers with only the study identification number and if the results of the current study

will be published or presented in a scientific meeting, names and other information that might identify you will not be used.

Benefits

There will be no direct benefit for your participation; however the study findings will help to identify factors contributing to caesarean section rates and hence strategize way forward to reduce. That can be achieved by alerting the policy makers on the magnitude of the situation which will lead to develop policy which will improve the quality of health care provider decision making to conduct only justifiable caesarean section and fostering vaginal delivery among women with uncomplicated pregnancies and labour.

Compensation:

There will be no compensation of any kind in participation.

Risk

The study will not harm you physically, psychologically or emotionally.

Rights to Withdraw and Alternatives

Participation in this study is voluntarily and you have the right to refuse to participate or withdraw from the study even if you have already given your consent. Refusal to participate or withdraw from the study will not involve penalty or loss of any benefits to which you are otherwise entitled.

Who to Contact

If you ever have questions about this study, you should contact the principle investigator **Samwel Mwangoka, RN +255 (0) 763 622 038**, P. O. Box 1142, Mbeya. If you ever have questions about your rights as a participant, you may contact or call Director of Research and Publications Committee Prof. Joyce Masala at MUHAS, P.O. Box 65001, Dar es Salaam.

Tel: 2150302-6.

Signature:

Do you agree to participate? Put \checkmark in appropriate box

Participant agrees Participant does NOT agree

I, _____ have read the contents in this form. My questions have been answered. I agree to participate in this study.

Signature of Participant _____ Date _____

Signature of the Researcher _____ Date _____

Appendix IV: Informed Consent - Swahili Version



CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI.

KURUGENZI YA UTAFITI NA UCHAPISHAJI

Ridhaa ya Kushiriki Katika Utafiti

Namba ya Utambulisho

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Habari, Jina langu naitwa Samwel Mwangoka, ni mwanafunzi wa shahada ya juu ya uzamili ya ukunga na afya ya mama katika Chuo kikuu cha Afya na Sayansi Shirikishi Muhimbili. Kwa sasa nafanya utafiti juu ya sababu zinazopelekea akina mama kujifungua kwa njia ya upasuaji Mkoa wa Mbeya Tanzania.

Malengo ya utafiti

Kuchunguza sababu zinazosababisha wakimama kujifungua kwa njia ya upasuaji.

Mfadhili

Mfadhili ni Wizara ya Afya, Maendeleo ya Jamii, Jinsia, Wazee na Watoto

Jinsi ya kushiriki

Ushiriki wako katika utafiti huu utakuwa kwa ridhaa yako binafsi na huru pasipo madhara yoyote. Katika ushiriki wako utahitajika kujibu maswali yana yohusu sababu zinazochangia kujifungua kwa njia ya upasuaji. Kujibu maswali itakuchukua muda wa dakika 10 hadi 20 kujaza maswali yote.

Usiri

Taarifa zote utakazotoa zitatuzwa katika usiri mkubwa, hutatakiwa kujaza jina lako, taarifa zitakazo kusanywa zitaingizwa katika komputa kwa namba ya utambulisho pekee na kama majibu yatatangazwa au kutolewa taarifa katika mkutano wakisayansi hakutatolewa jina au taarifa yoyote inayokutambulisha wewe.

Faida

Hakutakuwa na faida ya moja kwa moja katika ushiriki wako, japomajibu yatasaidia kujua sababu zinzaochangia ongezeko la kujifungua kwa njia ya upasuaji na kuweka mikakati ya kupunguza akina mama kujifungua kwa kufanyiwa upasuaji. Hii inawezekana kwa kutoa taarifa kwa watunga sera kwa hali halisi ilivyo ili kuandaa sera itakayoweka mikakati ya kuboresha utendaji kazi wa watoa huduma kwa kufanya upasuaji kwa sababu zilizo halali tu na kuwasaidia akina mama wasio na shida kujifungua kwa njia ya kawaida.

Fidia

Hakutakuwa na fidia ya namna yoyote ile katika ushiriki wako.

Athari

Utafiti huu hauna aina yoyote ya athari kimwili, kibaologia au kiakili.

Haki ya kujitoa katika utafiti

Ushiriki wako katika utafiti huu ni hiari yako na una haki kukataa kuto kushiriki au kujiondoa katika utafiti huu hata kama umetoa kibali cha kushiriki. Kukataa kushiriki au kujiondoa katika utafiti hutatoa fidia au kupoteza faida zako.

Nani wa Kuwasiliana

Kama kuna swali lolote lile kuhusu utafiti huu, wasiliana na mtafiti mkuu Samwel Mwangoka, kwa namba ya simu ya mkononi +25 763 622 038, Sanduku la Posta 1142, Mbeya. Kama una swali lolote kuhusu haki zako kama mshiriki unaweza kuwasiliana na mkuu

kamatiya kitengo cha utafiti na utangazaji Prof. Joyce Masala katika Chuo kikuu cha Afya na Sayansi Shirikishi Muhimbili, Sanduku la Posta 65001, Dar es Salaam. Simu: +255 2150302-6.

Je? Unakubali kushiriki, weka alama ya tiki (\checkmark) katika kisanduku husika

Ndiyo

Hapana

Mimi, _____ nimeelezwa / nimesoma maelezo yote ya fomu hii na nimejibiwa maswali yangu yote. Nimekubali kushiriki katika utafiti huu.


Sahihi ya mshiriki _____ Tarehe _____

Sahihi ya mtafiti _____ Tarehe _____

Appendix V: Ethical Clearance

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
DAR ES SALAAM
TANZANIA
Web: www.muhas.ac.tz



Tel G/Line: +255-22-2150302/6 Ext. 101
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E-mail: dpgs@muhas.ac.tz

Ref. No. MU/PGS/SAEC/Vol. I X/

3rd May, 2017


Mr. Samwel Mwangoka
MSc. Midwifery and Women's Health
MUHAS.

RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED: "FACTORS ASSOCIATED WITH CAESAREAN SECTION DELIVERIES AMONG WOMEN DELIVERING AT MBEYA ZONAL REFERRAL HOSPITAL IN MBEYA REGION"

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.

The ethical clearance is valid for one year only, from 3rd May, 2017 to 2nd May, 2018. In case you do not complete data analysis and dissertation report writing by 2nd May, 2018, you will have to apply for renewal of ethical clearance prior to the expiry date.



Prof. Andrew B. Pembe
DIRECTOR OF POSTGRADUATE STUDIES

cc: Director of Research and Publications
cc: Dean, School of Nursing

Appendix VI: Ethical Approval from Mbeya Medical Research and Ethics Committee

THE UNITED REPUBLIC OF TANZANIA MINISTRY OF HEALTH AND SOCIAL WELFARE

Cable Referral Hospital
Telephone: 2503456/2503351
Fax 2503577
Email: mrh@muchs.ac.tz



MBEYA CONSULTANT HOSPITAL
P. O. BOX 419
MBEYA

15th May, 2017

Ref No: GB.152/377/01/68

Mr. Samwel Mwangoka,
REG.NO. HD/MUH/T.324/2015,
Muhimbili University of Health and Allied Sciences,
P.O. Box 65001, Dar es Salaam,
Tanzania.

RE: **Factors associated with Caesarean Section deliveries among women delivering at Mbeya Zonal Referral Hospital in Mbeya, Tanzania.**

The Mbeya Medical Research and Ethics Committee received and reviewed the aforementioned protocol.


I would like to inform you that, the Mbeya Medical Research and Ethics Committee has granted Ethical Clearance of the above mentioned study protocol for the period of one year, from **15th May 2017 to 14th May 2018**.


This Ethical Clearance bears the following specifications;

1. As the PI, if you completed the work earlier than you had planned you must submit a final report to Mbeya Medical Research and Ethics Committee as soon as the work is completed;
2. You must notify the Mbeya Medical Research and Ethics Committee in writing regarding any alteration or deviation to the protocol;
3. To submit progress reports to the Mbeya Medical Research and Ethics Committee every six months;
4. If the research has been completed, abandoned, discontinued or not completed for any reason you are required to submit a final report on the research to the Mbeya Medical Research and Ethics Committee;
5. Extension approval is given for twelve months from **15th May 2017 to 14th May 2018**;
6. If unable to complete your research within the one year validation period you will be required to write to Mbeya Medical Research and Ethics Committee to request for an extension;
7. You must notify immediately the Mbeya Medical Research and Ethics Committee of any adverse event and/or unforeseen events that might affect continued ethical acceptability of the research;
8. To comply with approved study proposal, and at all times you are responsible for ethical conducts of your research.

Sincerely,

Executive Director
Mbeya Zonal Consultant Hospital
P. O. Box 419
Mbeya, Tanzania


Dr. Godlove F. Mbwangi, MD, MMED
Chairman: Mbeya Medical Research
and Ethics Review Committee.


Dr. Ruby D. Mcharo, MD, MPH-IH
Secretary: Mbeya Medical Research
and Ethics Review Committee.

cc: The Chairman; National Health Research Ethics Review Committee;
P.O.Box 9653, Dar es Salaam.