

**BIRTH PREPAREDNESS AMONG WOMEN IN THARAKA  
NITHI COUNTY, KENYA**

**BY**

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## DECLARATION

This thesis is my original work and has not been presented for a degree in any other University or other award.

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## **DEDICATION**

I dedicate this thesis to my daughter, Joy Gatwiri for her great encouragement during the study.

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## **DEFINITION OF TERMS**

**Birth preparedness-** it is a plan that a pregnant woman makes by identifying a place of birth, means of transport, saving money for delivery expenses, identifying a birth attendant, decision maker for delivery, companion and home care taker while in hospital.

**Determinant of birth preparedness-** it is a variable that influenced birth preparedness, either positively or negatively on logistic regression at statistically significant level ( $p < 0.05$ ).

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

**Maternal mortality ratio** -The number of maternal deaths per 100,000 live births in a specified period.

**Skilled birth attendant-** accredited health professional such as a mid wife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, child birth and immediate post natal period and in the identification, management and referral of complications in women and newborns.

**Women of reproductive age-** These are women aged 15-49 years.

## **ABBREVIATIONS AND ACRONYMS**

<b>AIDS</b>	Acquired Immuno-Deficiency Syndrome
<b>ANC</b>	Ante-natal Care
<b>AOP</b>	Annual Operation Plan
<b>BP</b>	Birth Preparedness
<b>DF</b>	Degrees of freedom
<b>DFID</b>	Department for International Development
<b>HIV</b>	Human Immuno-Deficiency Virus
<b>KDHS</b>	Kenya Demographic and Health Survey
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>MDG</b>	Millennium Development Goal
<b>MNH</b>	Maternal and Neonatal Health
<b>MOH</b>	Ministry Of Health
<b>NCAPD</b>	National Co-ordinating Agency for Population Development
<b>OR</b>	Odds Ratio
<b>TDHP</b>	Tharaka Sub-county Health Plan
<b>TDSP</b>	Tharaka Sub-county Strategic Plan
<b>UN</b>	United Nations
<b>UNFPA</b>	United Nations Population Fund
<b>UNICEF</b>	United Nation's Children's Fund
<b>USAID</b>	United States Agency for International Development
<b>WHO</b>	World Health Organisation

## ABSTRACT

It is estimated that in 2008, 358,000 maternal deaths occurred in the world. It is also estimated that in Kenya, 7,700 women die annually due to pregnancy related complications. This translates to approximately 21 women each day or approximately one Kenyan woman every hour. Out of every 10 women, 9 of them receive skilled ante-natal care but only 4 receive skilled birth attendance. The objective of the study was to assess the determinants of birth preparedness among women attending maternal and child health in Tharaka sub-county. The specific objectives were to assess the proportion of women with birth preparedness plans, to assess the socio-demographic, maternal and institutional determinants of birth preparedness. The area of study was Tharaka sub-county and the target population were women who had delivered within two years prior to the study attending maternal and child health clinics. A descriptive cross sectional study was carried out. Data collection was done using interviewer administered questionnaires, focus group discussion guide and key informant interview guide. Tharaka sub-county was purposively selected. Stratified sampling was used to select the facilities while systematic sampling was used to select the respondents. Every 14<sup>th</sup> client attending maternal and child health clinic was interviewed. The sample size was 345. STATA version 11 was used to analyse the data. Descriptive statistics was used to generate proportions and frequencies while chi square, Fisher's exact test and logistic regression were used to draw inferences. This study found out that the proportion of women that was prepared for birth was low (20.3%). The aspect of birth preparedness that was identified and planned for by the highest number of women was finances for delivery expenses (74%) followed by place of delivery (68%) while the least was the mode of transport to the facility (35%). The socio-demographic determinants were maternal education (OR=1.5), occupation (OR=3.5), average income (OR=1.6) and marital status (OR=2.2). The maternal determinants were history of still birth (OR=0.2) and attendance of 4 or more ante natal visits (OR=2.2). There were no institutional determinants of birth preparedness with this study. In conclusion, the level of birth preparedness is low. The research recommends to ministry of health to sensitize women of reproductive age on birth preparedness. Birth preparedness should also be improved through quality ANC. The government through relevant agencies should encourage the education of the girl child and put in place strategies to increase the average income of women.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the study**

Maternal mortality, the death of a woman while pregnant or within 42 days of termination of pregnancy, remains disturbingly high in sub-Saharan Africa. It is estimated that 270, 000 maternal deaths occurred in the region in 2005. The United Nations (UN) Millennium Development Goal (MDG) on maternal health aims to reduce the number of women who die in pregnancy and childbirth by three-quarters between 1990 and 2015. To achieve this goal, it is estimated that an annual decline in maternal mortality of 5.5% is needed; however between 1990 and 2005 the annual decline was only 0.5% in the sub-Saharan region, compared to 4.2% for the middle income countries of Asia (WHO, 2008).

Maternal mortality occurs from risks attributable to pregnancy and child birth as well as from poor availability and quality of health services. The most common causes of maternal mortality in sub-Saharan Africa include haemorrhage (34%), sepsis/infections (10%), hypertensive disorders (9%), (HIV/AIDS) (6%), and other direct causes (5%); other indirect causes contributed approximately 17% (Ouma, 2010).

In Kenya the maternal mortality ratio is 488 maternal deaths per 100, 000 live births (KNBS, 2010). Despite 92% ante natal care attendance by medical professionals, only 44% deliver under skilled assistance and 43% in health facilities. Eastern province where Tharaka sub-county is located has only 43.1% of the women delivery in health facility and 42.8% under skilled attendance (KNBS, 2010).

Birth preparedness is one of the elements of focused ante-natal care (WHO, 2006). Birth preparedness and complication readiness is an approach that aims at raising awareness at the community level and creating a stronger demand for quality health services. Since pregnancy is perceived as an ordinary event, most families do not plan for a birth nor do they expect an emergency. When a pregnancy complication arises, the family is unprepared and while gathering funds, finding transportation and reaching the appropriate health facility, time is usually wasted and in many cases, it is too late. Thus it is imperative that all women and their families are equipped with adequate information about the danger signs of a pregnancy complication and what actions should be taken. In addition, building or strengthening networks in the community is essential in order to ensure timely referrals and establish reliable transportation options (Paula, 2005)

A birth preparedness plan includes identification by the pregnant woman of the following elements; the desired place of birth, the preferred birth attendant, the location of the closest appropriate care facility, funds for birth related and emergency expenses, a decision maker during birth process, a birth companion, support in looking after the home and children while the woman is away, transport to a health facility for the birth, transport in the case of an obstetric emergency and identification of compatible blood donors in case of emergency (WHO, 2006).

WHO recommends that pregnant women should have a written plan for birth and for dealing with unexpected adverse events, such as complications or emergencies, that may occur during pregnancy, childbirth or the immediate

postnatal period, and should discuss and review this plan with a skilled attendant at each ante-natal assessment and at least one month prior to the expected date of birth (WHO, 2006).

## **1.2 Problem statement**

It is estimated that in 2008, 358,000 maternal deaths occurred in the world (WHO, 2010). It is also estimated that in Kenya, 7,700 women die annually due to pregnancy related complications. This translates to approximately 21 women each day or approximately one Kenyan woman every hour (USAID, 2010).

The fifth Millennium Development Goal is to reduce the maternal mortality ratio by 75% between 1990 and 2015. The 2008-09 KDHS results show that maternal mortality remains high in Kenya at 488 maternal deaths per 100, 000 live births. This is far from the Millennium Development goal number five target by 2015 that is 147 maternal deaths per 100, 000 live births (KNBS, 2010).

In Kenya 92 percent of women receive skilled ante natal care from health professionals but only 43 percent deliver under skilled attendance that is below the 2010 MDG 5 target of 67 percent and much below the 2015 target of 90 percent. In addition, only 44 percent deliver at health facilities. Fifty six (56) percent of the deliveries occur at home. This situation is not better in Eastern province where there is 93.4 percent ante-natal care attendance by health professionals but has only 42.8 percent health facility delivery and 43.1 percent skilled attendance during delivery. Women in rural areas are more than twice likely to deliver at home compared with those in urban areas (KNBS, 2010).

Tharaka, a sub-county with an estimated 4732 deliveries and over 80 percent skilled ante-natal attendance, 61 percent of the women deliver with no skilled



assistance (mainly at home or on the way to health facility) (TDHP, 2008). WHO (2008) indicated that birth preparedness reduces home deliveries with a consequent increase in skilled attendance at birth. The sub-county health management team has expressed need for information that can reduce lack of skilled attendance at birth (Tharaka sub-county AOP, 2011). This study sought to avail information on the level and the determinants of birth preparedness.

### **1.3 Justification**

Every pregnant woman faces risk of life threatening obstetric complications (Othman *et al.*, 2011). The UN Millennium Development Goal (MDG) on maternal health aims to reduce the number of women who die in pregnancy and childbirth by three-quarters between 1990 and 2015. To achieve this goal, it is estimated that an annual decline in maternal mortality of 5.5% is needed; however between 1990 and 2005 the annual decline was only 0.5% in the sub-Saharan region, compared to 4.2% for the middle income countries of Asia (WHO, 2006).

One of the strategies of achieving vision 2030 is by reducing maternal mortality (NCAPD, 2010). The KDHS 2008-2009 found significant gaps in two aspects of birth preparedness (lack of transport or facility too far away and cost for delivering in the facility. The main reasons for women whose most recent birth in the five years before the survey did not occur in a health facility were that it was too far away or that there was no transport to get to the facility, or both (42 percent) and that it was not necessary (21 percent). Also cited frequently was that delivery occurred too fast to get to a facility (18 percent) and that it cost too much to deliver in a facility (17 percent) (KNBS, 2010).

Among the reasons cited by women in eastern province (in which Tharaka sub-county falls) were health facility was too far away or lack of transport services, or both (42.6%), it cost too much to deliver in a health facility (21.6%) and the delivery occurred too fast (21.4%). More rural women cited cost (17%) as compared to urban women (15.8%). Similarly more rural women cited lack of transport or distance from health facility as a reason for not delivering in the health facility (43.8%) compared to 30.8% in urban areas. The other aspects were not assessed in the survey (KNBS, 2010). Research in the Homa Bay (Kenya) showed that women and families prepare for the arrival of a new baby by setting aside some money but many do little else to prepare for the upcoming birth (Paula, 2005).

In Tharaka, only 61 % of the women in the sub-county deliver without skilled attendance (MOH, 2008). Tharaka sub-county also has a problem in accessing health facilities for delivery or emergency care since the average distance to the nearest health facility is 7 km. Pregnant women with complications face worse situations because the sub-county hospital does not have an operational theatre for caesarean sections or any other obstetric operation. The nearest referral hospital may be as far as 30km away from the point of diagnosis (TDHP, 2008).

#### **1.4 Research questions**

1. What proportion of women who delivered within the last two years had birth preparedness plans in Tharaka sub-county?
2. What are the socio-demographic determinants of birth preparedness among women who delivered within the last two years in Tharaka sub-county?
3. What are the maternal determinants of birth preparedness among women who delivered within the last two years in Tharaka sub-county?

4. What are the institutional determinants of birth preparedness among women who delivered within the last two years in Tharaka sub-county?

### **1.5 Null Hypotheses**

1. Socio-demographic factors do not significantly influence birth preparedness among women who delivered within the last two years in Tharaka sub-county.
2. Maternal factors do not significantly influence birth preparedness among women who delivered within the last two years in Tharaka sub-county.
3. Institutional factors do not significantly influence birth preparedness among women who delivered within the last two years in Tharaka sub-county.

### **1.6 Objectives**

#### **1.6.1 Broad objective**

To assess the determinants of birth preparedness among women who delivered in the last two years in Tharaka sub-county.

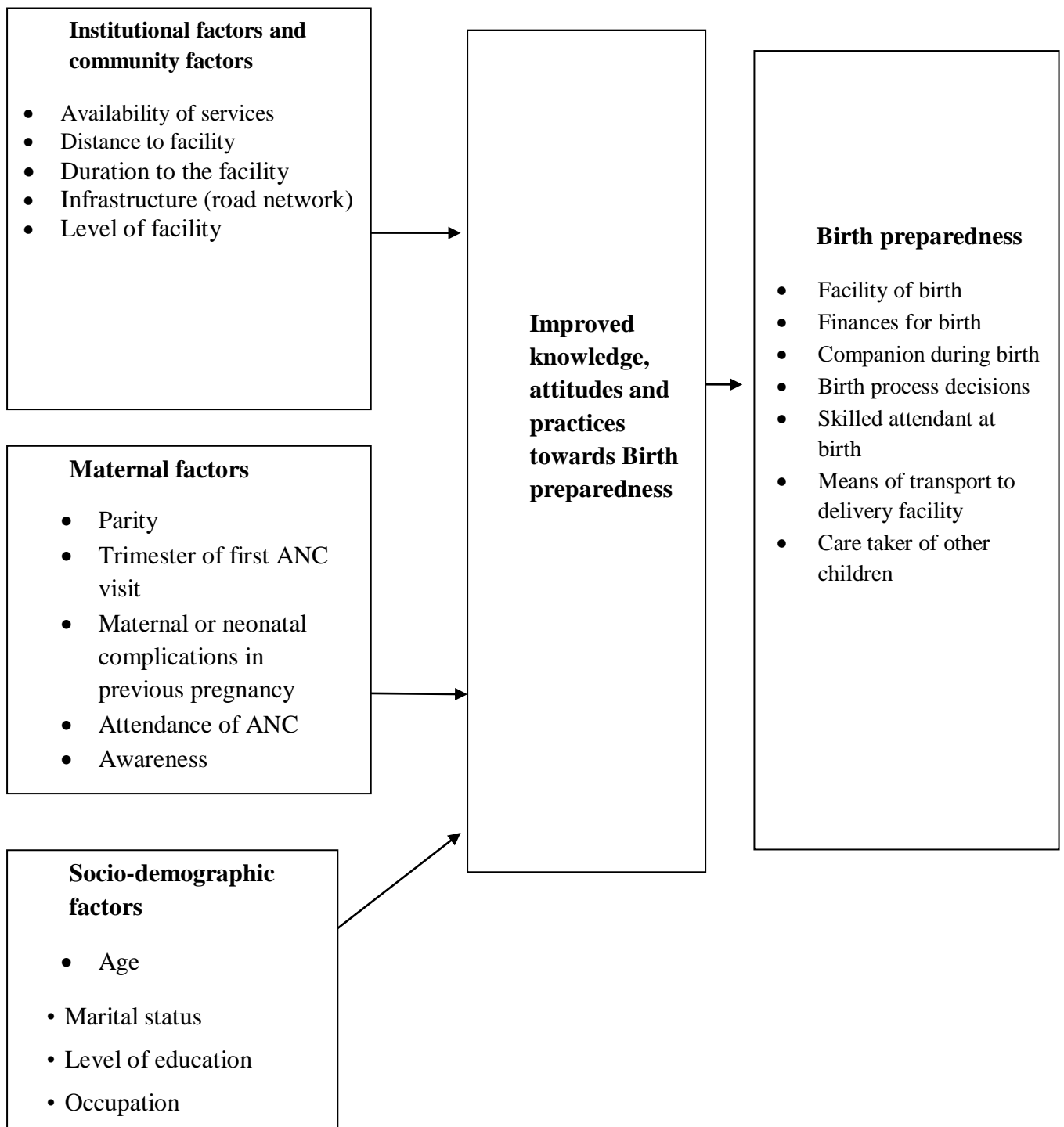
#### **1.6.2 Specific objectives**

1. To determine the proportion of women who delivered within the last two years who had birth preparedness plans in Tharaka sub-county.
2. To assess the socio-demographic determinants of birth preparedness among women who delivered in the last two years in Tharaka sub-county.
3. To assess the maternal determinants of birth preparedness among women who delivered in the last two years in Tharaka sub-county.
4. To assess the institutional determinants of birth preparedness among women who delivered in the last two years in Tharaka sub-county.

**1.7 Significance and anticipated output**

This study generated information that can be used by decision makers to improve birth preparedness and consequently increase skilled birth attendance. The implementation of the findings of this study will lead to change in decisions at individual, family, county and national level. It can be used at policy and operational levels

## 1.8 Conceptual framework



Source (adapted and modified from JHPIEGO, 2004)

**Figure 1.1: Conceptual Framework**

## **Description of the Conceptual Framework**

### **Institutional factors**

The institutional and community factors are essential in achieving birth preparedness. The concept of birth preparedness is part of ante-natal care where mothers are taught on how to prepare for birth by health care workers. The approach and attitude expressed during the teaching determines to some extent the level of uptake of birth preparedness. The availability of services also determines whether one will prepare to seek services in that particular facility.

### **Community factors**

These include factors found within the community that can be social or infrastructural. Infrastructure like road network is essential in having skilled attendance and reducing the delay of accessing the health facility. In a context like Tharaka sub-county where there is poor road network mothers need to prepare in advance. The means of transport like a vehicle to take one to hospital during labour is a major determinant of skilled attendance. A cultural belief like one has to deliver at home to prove that one is a 'real African woman affects need to deliver in a health facility'.

### **Socio-demographic factors**

This includes age, residence, occupation, religion and level of education. An individual or a combination of factors may influence having birth preparedness. The level of education may affect decision making while religious affiliation may influence the acceptability of facility services.

**Maternal factors**

Parity, gestation, outcome of previous pregnancies and place of birth of the last child may influence birth preparedness. Women with many births may occasionally not make plans because of their 'experience in labour' or prepare out of good practices learnt while the ones with the first pregnancy may prepare out of anxiety or fail to do so because of ignorance.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Global Magnitude of maternal mortality**

Maternal mortality is a major public health problem in Kenya. The survival of women reflects whether or not women matter (DFID, 2008). Out of 136 million women who give birth every year, about 20 million experience pregnancy-related illness after childbirth (WHO, 2008).

Maternal mortality remains disturbingly high in sub-Saharan Africa. It is estimated that 270,000 maternal deaths occurred in the region in 2005. The fifth UN Millennium Development Goal on maternal health aims to reduce the number of women who die in pregnancy and childbirth by three-quarters between 1990 and 2015. To achieve this goal, it is estimated that an annual decline in maternal mortality of 5.5% is needed; however between 1990 and 2005 the annual decline was only 0.5% in the sub-Saharan region, compared to 4.2% for the middle income countries of Asia (WHO, 2010).

### **2.2 National magnitude of Maternal Mortality**

Complications of pregnancy and child birth are among the leading causes of morbidity and mortality among Kenyan women. The maternal mortality ratio is 488 maternal deaths per 100 000 live births. Despite 92% ante natal care attendance by health professionals, only 44% deliver under skilled assistance and 43% in health facilities. Eastern province where Tharaka sub-county is located has only 43.1% of the women delivering in health facility and 42.8% under skilled attendance (KNBS, 2010).



Maternal mortality occurs from risks attributable to pregnancy and child birth as well as from poor availability and quality of health services. The most common causes of maternal mortality in sub-Saharan Africa include haemorrhage (34%), sepsis/infections (10%), hypertensive disorders (9%), HIV/AIDS (6%), and other direct causes (5%); other indirect causes contribute approximately 17%. Most of the causes are preventable (Ouma, 2010).

The KDHS 2008-2009 identified significant gaps in two aspects of birth preparedness (lack of transport or facility too far away and cost for delivering in the facility). The main reasons for Women whose most recent birth in the five years before the survey did not occur in a health facilities were that were too far away or that there were no means of transport to get to the facilities, or both (42 percent) and that it was not necessary (21 percent). Also cited frequently was that the delivery occurred too fast to get to a facility (18 percent) and that it cost too much to deliver in a facility (17 percent) (KNBS, 2010).

### **2.3 Factors on Birth preparedness in Tharaka Nithi County and Eastern province, Kenya**

Among the reasons cited by women in eastern province (in which Tharaka sub-county falls) were health facilities were too far away or lack of transport services, or both (42.6%), it cost too much to deliver in health facilities (21.6%) and the delivery occurred too fast (21.4%). More rural women cited cost (17%) compared to urban women (15.8%). Similarly more rural women cited lack of transport or distance from health facility as a reason for not delivering in health facilities (43.8%) compared to 30.8% in urban areas (KNBS, 2010).

## **2.4 Ante-natal care (ANC): Its role and value in birth preparedness**

The entry point for birth preparedness is routinely through the ante natal services where the woman is expected to attend for comprehensive screening, prevention and care ideally at least four visits during the trimesters of pregnancy, ANC is usually provided at primary healthcare level as part of a basic package of maternal healthcare. During the first visit the mother is taken through birth preparedness concept (Caravan, 2009).

## **2.5 The concept of birth preparedness**

Maternal deaths are thought to occur due to three main delays; delays in deciding to seek care, delays in reaching care, and delays in receiving care. These delays have many causes, including logistic and financial concerns, unsupportive policies, and gaps in services, as well as inadequate community and family awareness and knowledge about maternal and newborn health issues. (WHO, 2006)

Delays in deciding to seek care may be caused by failure to recognize signs of complications, failure to perceive the severity of illness, cost considerations, previous negative experiences with the health care system, and transportation difficulties. Delays in reaching care may be created by the distance from a woman's home to a facility or provider, the condition of roads, and a lack of emergency transportation. Delays in receiving care may result from unprofessional attitudes of providers, shortages of supplies and basic equipment, a lack of health care personnel, and poor skills of health care providers. The causes of these delays are common and predictable (Waiswa *et al.*, 2010)

Birth Preparedness (BP) is the process of planning for normal birth and anticipating the actions needed in case of an emergency. Responsibility for BP must be shared among all safe motherhood stakeholders; policy makers, facility managers, providers, communities, families, and women because a coordinated effort is needed to reduce the delays that contribute to maternal and new born deaths (Deoki, 2009).

The Birth Preparedness framework can be critiqued for being based on the assumption that if knowledge about complications and treatment options is increased, and practical barriers, such as the availability of cash and means of transportation are removed, behaviour will change accordingly and the utilisation of emergency obstetric care services will increase. In line with non-health determinants such as educational, social and economic indicators, this assumption has also been challenged in other reviews, stating that it does not take into account the complexity of behaviour change and the multitude of factors that determine and influence behaviour. From this critique, it is thought that that in order to enhance behaviour change, the implementation of a birth preparedness project needs the continuous involvement and participation of community and health system stakeholders, so that other contributing and inhibiting factors can be recognised, accounted for and managed accordingly (Caravan, 2009).

## **2.6 Elements of birth preparedness**

A birth plan/emergency preparedness plan includes identification of the following elements : the desired place of birth; the preferred birth attendant; the location of the closest appropriate care facility; funds for birth-related and emergency expenses; a birth companion; support in looking after the home and

children while the woman is away; transport to a health facility for the birth; transport in the case of an obstetric emergency; and identification of compatible blood donors in case of emergency (WHO, 2006).

Historical evidence indicates that no country has managed to bring to bring its maternal mortality ratio below 100 per 100 000 live births without ensuring that all women are attended by an appropriate skilled health professional during the perinatal period. Birth preparedness is one of the strategies to increase skilled attendance (WHO, 2010). Birth preparedness is not easy to achieve due to poverty in developing countries. The situation is worse in rural areas because of poor transport and the money to pay for it (WHO, 2006).

## **2.7 Birth preparedness awareness and practices**

A study in Adrigat town (Ethiopia) identified poor comprehensive knowledge and practices of preparation for birth (Mihret *et al.*, 2006). Among 534 respondents taking into account identification of place of delivery, means of transport and saving money indicated that only 22% were prepared (Mihret *et al.*, 2006).

In a related study in Southern Ethiopia among 743 pregnant women, only a 20.5% of them identified a skilled provider and 8.1% identified a health facility for delivery care. Identification of means of transport to the delivery facility was also low (7.7%) and only 34.5% had saved money for delivery costs. Majority of the respondents were to deliver at home (87.9%), with only 8% planning to deliver in hospital (Hailu *et al.*, 2011). In another study in northern Nigeria on birth preparedness and fathers participation, only 6.2% had saved money for

delivery costs and 19.5% had made arrangements for transport in the hospital (Zubairu, *et al.*, 2010).

Siddaharth, *et al.*, (2010) in a cross sectional study on birth preparedness among slum women in Indore city (India) indicated that 47.8% of the women prepared for birth in respect to identification of skilled attendance, place of delivery, means of transport and saving money for delivery costs. They deemed those who had at least three aspects to have prepared.

Deoki (2009) in a study in Indore, India found that 18.6% of the women had transportation means and 44.2% had saved money for delivery. The overall birth preparedness and complication readiness index was 47.5%. Research in Homa Bay, Kenya showed that women and families prepare for the arrival of a new baby by setting aside some money but many do little else to prepare for the upcoming birth (Paula, 2005).

In a study in Kenyatta National Hospital by Mutiso (2008), over 60% of the respondents were counselled by health workers on various elements of birth preparedness. The study also established that most of the respondents (84.3%) had set aside funds for transport to hospital during labour while 62.9% had funds for emergencies and found that 65.2% had identified a birth companion.

## **2.8 Individual factors that influence birth preparedness**

A study in Adrigat, Ethiopia indicated that maternal education was a strong predictor in preparation for birth and complication. Literate mothers were about two times more likely to be prepared for birth and complication than illiterate

women. Marital status was another factor that was strongly associated with birth preparedness and complications readiness. Married women were more likely to be prepared for birth/complication than non-married. There was a statistically significant association between parity and preparation for birth and its complication. Women with parity range of 2 to 4 were more likely to prepare for birth and its complication than grand multiparas (more than 4 deliveries) and primiparous women (first time delivery). Women who had history of still birth were also more likely to prepare for birth and its complication than those who did not have still birth. Advice given on preparation for birth and its complication during ANC follow up was also significantly associated with preparation for birth/complication. Women who were advised about where to give birth and arrangements for money and transportation during their ANC follow up were more likely to be prepared for birth and its complication than those that were not given such advice (Mihret *et al.*, 2006).

A cross sectional study on birth preparedness among slum women in Indore city (India) found that literacy, availability of ante-natal services, literate husband, better knowledge about maternal/newborn danger signs suggestive for seeking referral were associated with well preparedness (Siddharth, *et al.*, (2010).

In a study in Kenyatta National Hospital found that the level of education positively influenced birth preparedness (Mutiso, 2008). In a study in Uganda, parity, age of spouse, education level, occupation of spouse, presence of pregnancy complications and the anticipated mode of delivery were associated with having a birth plan. Educated women have better pregnancy outcome compared with uneducated women, possibly since they are better informed, are

likely to make better choices, are more likely to develop and implement a birth plan, and are more socially or financially empowered to make the necessary decisions in case of obstetric emergencies. Information, education and counselling plays a vital role in prevention of maternal death. This it does by making the pregnant women (and their partners) aware of the sequence of events from late recognition of danger signs, through delays in seeking care to delays in receiving prompt care (Kakaire *et al.*, 2011)

## **2.9 Community factors that influence birth preparedness**

In addition to health factors like haemorrhage, non health factors have been associated with poor maternal outcomes. They include poor health seeking behaviour, illiteracy, inadequate health education on obstetric emergencies and poverty. Socio-cultural beliefs and practices that lead to gender inequity have also contributed in some societies. Poverty and low priority in health in developing countries have led to bad health indicators. Finally inadequate infrastructure and long travelling distance to health facilities increase the second and third delay (Kijugu, 2009).

The community is expected to advocate and facilitate birth preparedness via recognizing danger signs, having a functional transport system, community financing and advocating the concept (JHPIEGO, 2001). Seventy five percent of maternal deaths can be prevented through timely access to child birth related care (WHO, 2001). Long distance and high transportation cost are disincentives to seeking care. Transport infrastructure is also essential in delivering commodities for health care (Molesworth, 2006).

## **2.10 Institutional factors**

For effective implementation of birth preparedness, policy makers are expected to create an environment that supports the survival of women and newborns.

This is by formulating the appropriate policies, using evidence based decision making and providing adequate resources. The facilities should be well adequately staffed and managed to provide skilled care for the pregnant women and newborn. The health care providers should be well skilled to manage normal and complicated pregnancies (JHPIEGO, 2001).

### **2.11 Synopsis of literature review**

Maternal mortality is a public health problem in Kenya with a maternal mortality of 488 per 100,000 live births. KDHS 2008/2009 assessed only two aspects of birth preparedness (cost for delivery and means of transport to the facility). A few studies have been done in Kenya but mainly in urban areas. In one study based in Kenyatta National Hospital, the area of study was only one facility in an urban set up. Most studies have also focused on institutional issues affecting maternal health. This study assessed the six components of birth preparedness in a rural set up.



## **CHAPTER THREE: MATERIALS AND METHODS**

### **3.1 Study design**

The study used descriptive cross-sectional survey design to generate both quantitative and qualitative data. This snap shot design described the situation of birth preparedness during the time of study. Cause effect relationship was not established. This design is inexpensive and takes a shorter time compared to other designs.

### **3.2 Variables of the study**

#### **3.2.1 Dependent variable**

The dependent variable was birth preparedness. The women were grouped as “prepared” and “unprepared”. Women who had prepared on the six aspects of birth preparedness as described by WHO were deemed “prepared” while those who had done less than six aspects were deemed “unprepared”. The six aspects are planning for facility of birth, finances, birth companion, skilled birth attendant, mode of transport to the facility and caretaker of the children and home during delivery.

#### **3.2.2 Independent variables**

The independent variables were socio-demographic factors (age, level of education, marital status, religion, residence and occupation), maternal factors (parity, ANC attendance, trimester of first ANC attendance, maternal or neonatal complication in a previous pregnancy and awareness of birth preparedness) and institutional factors (duration to delivery facility, distance to delivery facility, level of ANC facility and advice on birth preparedness).

### **3.3 Location of the study**

The study was conducted in Tharaka sub-county in eastern province, Kenya. It is in Tharaka Nithi County and has three administrative divisions (Tharaka south, Tharaka north and Tharaka central). The sub-county borders Meru central sub-county to the north, Meru north sub-county to the north east, Mwingi sub-county to the south east, Mbeere sub-county to the south and Meru south sub-county to the east. Most of the sub-county is rural with a few urban areas coming up. The sub-county covers an area of 1569.5 km<sup>2</sup> (TDSP, 2005). It has a total population of 130,098 people among them 67,211 are women (KNBS, 2010).

The sub-county has one sub-county hospital without operational theatre, one mission hospital, one sub sub-county hospital, two health centres and twenty dispensaries (TDHP, 2008). The number of women of reproductive age is 31,547. The estimated number of pregnant women is 4732 (KNBS 2010). Only 39.2% of the women in the sub-county deliver under skilled attendance. The average distance to the nearest facility is 7km. The referral facility may be as far as 30km. Most of the sub-county does not have good transport network (TDHP, 2008). (See Appendix 6: Map of Tharaka Sub-county).

### **3.4 Target population**

The target population was women who delivered in the last two years in Tharaka sub-county. This was estimated to be 4732 (KNBS, 2010).

### **3.5 Study population**

The study population was women who delivered in the last two years in Tharaka sub-county attending the health facilities within the sub-county. They were

attending the facilities for maternal or child health services. It also included the health workers that took part as key informants in the interviews.

### **3.6 Recruitment criteria**

#### **3.6.1 Inclusion criteria**

To be eligible to participate in the study, individuals were to be:

1. Willing and able to give informed consent.
2. Women who delivered within the last two years in Tharaka sub-county during the study period.

#### **3.6.2 Exclusion criteria**

Women were excluded from the study if:

1. They were not residents of Tharaka sub-county in the period of reference.
2. They delivered more than two years before the study.
3. They did not deliver in Tharaka sub-county.

### **3.7 Sampling method**

Tharaka sub-county was purposively selected because of its location in the former Eastern Province which had poor indicators related to birth preparedness and poor infrastructural network that is a major indication of birth preparedness. Stratified sampling was used to select facilities of study while systematic sampling was used to select the respondents. Stratification of the health facilities was done using the level and the region where the facility falls. The sub-county has one sub-county hospital (Tharaka) in central region, one faith based hospital (St. Orsola, Matiri) in the south region and one sub sub-county hospital that were selected. Among two health centres, one (Chiakariga health centre) was

selected through simple random sampling. Among twenty dispensaries five were selected using stratified sampling (with region as the factor). The sub-county targeted to offer maternal and child health services in the various levels as follows; Level 4 to handle 1280 clients, Level 3 to handle 1780 clients and level 2 to handle 1672 clients. The sample size was proportionally distributed based on the above targets as follows; 94 respondents in level 4, 130 respondents in level 3 and 120 clients in level 2. Systematic sampling was used where every 14<sup>th</sup> client attending maternal/child health clinic in the sampled facilities was interviewed. The calculation is as follows  $K^{th} = N/n$ . N is the target population which is 4732, n is the sample size which is 345.  $K^{th} = 4732/345 = 14$ . The first respondent was picked by randomly picking the attendance number that the mothers were given when they arrived at the clinic. The key informants purposively selected basing on experience of the health worker on implementation of birth preparedness.

### **3.8 Sample size Determination**

Sample size was calculated by formula as used by Fisher (1937). In a context where the target population is more than 10,000 the formula is

$$n = z^2 pq / d^2$$

n= desired sample size

Z=standard normal deviate (1.96) that corresponds to 95% confidence level.

p= the proportion in the target population estimated to have a particular characteristic (birth preparedness). A study in Kenyatta national hospital indicated that the birth preparedness was 59% (Mutiso, 2008).

$$q=1.0-p$$

d= the degree of accuracy desired (0.05 will be used in the current case)

$$n= ((1.96)^2(0.59) (0.41))/ (0.05)^2$$

$$(3.8416*0.2419)/0.0025$$

$$=0.9604/0.0025= 372$$

In Tharaka sub-county where this study was carried the target population was 4,732 (KNBS, 2010) which was less than 10,000. In this context the following formula was used.

$$n_f = n/(1+n/N)$$

$n_f$ = sample size when the total population is less than 10,000.

N= estimated total population less than 10,000

n= estimate sample when the total population is more than 10,000.

The estimate population of pregnant women is 4732 women (KNBS, 2010).

The sample size for a population more than 10,000 is 350.

$$n_f= 372/(1+372/4732) = 345.$$

The computed sample size was 345.

### **3.9 Construction and research instruments**

Semi-structured questionnaires were mainly used to collect quantitative data.

Focus group discussion guides and interview schedule were used to collect most of the qualitative data.

### **3.10 Pre-test**

The pre-test was done at Kajuki health centre that is in Igamba-Ngombe division of Meru south sub-county, Tharaka Nithi County. These facilities had similar population to the study population. The location has similar characteristics in terms of transport network and demographic factors. They are located in a neighbour sub-county. The questionnaires were administered to 35 respondents (10% of the sample size) attending maternal and child health services at the pre-test facility. One Key Informant was interviewed and one Focus Group Discussion was done. Finding of this study indicated that the tools were valid and reliable. Adjustments were done before production of final data collection tools.

### **3.11 Validity**

Validity is the test of degree of accuracy of a result or a test of how well the designed tool would measure what they were supposed to measure in the study. This was ensured by conducting a pre-test as earlier described. The study subjects were selected randomly and met the inclusion criteria. The researcher also counterchecked the filled questionnaires and schedules for completeness. A panel of experts (supervisors) also validated the data collection instruments.

### **3.12 Reliability**

Reliability is the test of generalizability/repeatability/consistency of results of a study. This was ensured by use of well designed questionnaires, proper selection, training and close supervision of research assistants and daily monitoring and correction of completely filled questionnaires to ensure there were no gaps.

### **3.13 Data collection techniques**

Seven research assistants were involved in data collection after a comprehensive training on management of respondents and administration of questionnaires. Administration of questionnaires was done to collect quantitative data. This was a researcher administered approach. The data collected with the tool included socio-demographic data, maternal factors and some institutional and community factors. Qualitative data was collected through three focus group discussions and three key informant interviews. There was a Focus Group Discussion and a key Informant interview in each of the three divisions. Secondary data was collected through desk review of facility and sub-county management records using a checklist.

### **3.14 Data entry and analysis**

Data was entered into STATA version 11. Descriptive statistics were used to generate frequencies and proportions. The dependent variable was organised as a binary variable with two categories; prepared and not prepared. Chi square at 95% confidence interval was used to test the association of the independent and dependent variables. The variables that had statistically significant association at P value <0.05 using chi square were subjected to logistic regression to generate the odds ratios.

### **3.14 Logistical and Ethical Considerations**

Ethical approval was sought from Kenyatta University Ethics and research committee and research permit from Ministry of Higher Education Science and Technology to carry out the study. Permission was sought from the various authorities; Tharaka sub-county health management team and heads of the

various facilities. Consent was sought from each respondent on voluntary basis. The extent, the benefits and risks were properly explained to the respondents. Participation was voluntary and participants chose to or not participate and chose to pull out at any point in the study. A parent or guardian gave informed consent for minors. The participants were given a consent form to sign before participation and were given contact of the principal investigator, the supervisors and the director Incharge of research in Kenyatta University to address any concerns that would have arisen in the field.



## **CHAPTER FOUR: RESULTS**

### **4.1 Introduction**

This chapter describes the findings and interpretations. It is per the objectives; demographic characteristics, proportion of women that were prepared for birth and the outcomes, determinants of birth preparedness (demographic, maternal and institutional) and discussion.

### **4.2 Demographic characteristics of the respondents**

Table 4.1 shows the demographic characteristics of the respondents. The modal age group was 20-24 years (30.1 %) and the least was aged 45-49 years (0.9%). The mean age was 27.7 years. Most respondents (86%) had not attained secondary education. Most respondents were married (81.7%). Majority (97.1%) resided in rural areas. Most (68%) of the respondents were protestants.

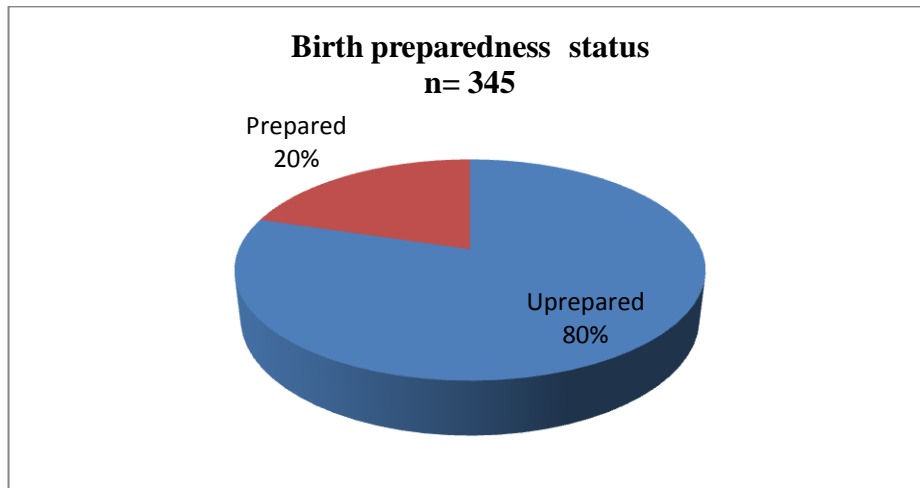
**Table 4.1 Demographic characteristics**

<b>Variable</b>	<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
<b>Grouped age in years</b> <b>N= 345</b>	Below 20	32	9.3
	20-24	104	30.1
	25-29	81	23.5
	30-34	57	16.5
	35-39	47	13.6
	40-44	24	7.0
<b>Highest level of education</b> <b>N=345</b>	No formal education	19	5.5
	Lower primary	54	15.7
	Upper primary	202	58.5
	Tertiary education	22	6.3
<b>Marital status</b> <b>N=345</b>	Never married	49	14.2
	Married	282	81.7
	Separated	7	2.0
	Divorced	4	1.2
	Windowed	3	0.9
<b>Religion</b> <b>N=345</b>	Protestant	235	68.4
	Catholic	108	31.6
<b>Residence</b> <b>N= 345</b>	Rural	335	97.1
	Urban	10	2.9

### **4.3 The proportion of women with birth preparedness plans**

Birth preparedness was the dependent variable in the study. The women were grouped as prepared or unprepared. A woman was deemed prepared for birth if they had planned for the six aspects of birth preparedness as recommended by

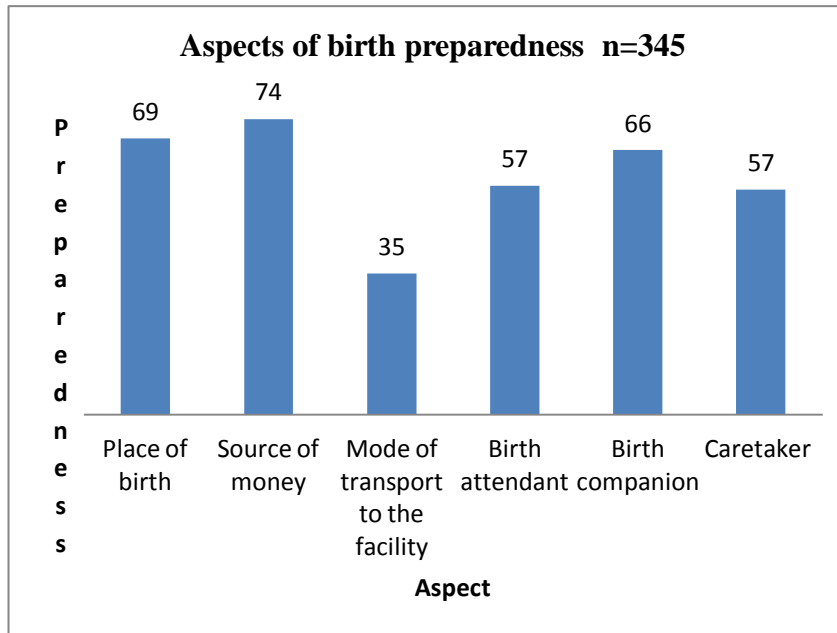
World Health Organization. Figure 4.1 shows the birth preparedness status. Only 20% (70 respondents) of the women were prepared for birth.



**Figure 4.1: Birth preparedness status**

#### **4.3.1 Birth preparedness aspects**

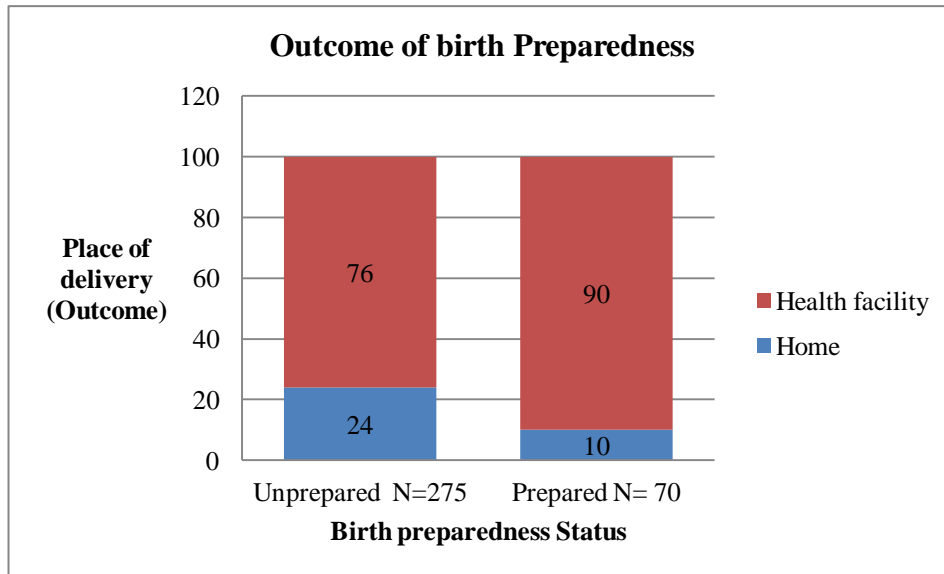
Figure 4.2 shows the aspects of birth preparedness that women planned for. The most planned for aspect was source of money (74%) followed by place of delivery (69%) and the least was mode of transport (35%).



**Figure 4.2: Birth preparedness aspects that were planned for**

#### **4.3.2 Outcome of birth preparedness**

The place of delivery was used to assess the outcome of birth preparedness. Figure 4.3 illustrates the outcome of birth preparedness among 345 respondents. Ninety percent of the women who were prepared for birth delivered in a health facility compared to 75.6% of the unprepared women. Among the women that delivered at home, 10 % were prepared for birth while 24.4% were unprepared. Using chi square test, there was a statistically significant association between birth preparedness and place of delivery ( $\chi^2$  (1) = 6.83\*, P = 0.009). Using logistic regression, women who were prepared for birth were about 3 times more likely to deliver in health facility compared to those who were unprepared (Odds Ratio (OR) = 2.899, P = 0.012). This study found that birth preparedness had a positive influence on likelihood of health facility delivery.



**Figure 4.3: Outcome of birth preparedness**

#### **4.4 Demographic factors associated with birth preparedness**

##### **4.4.1 Demographic factors associated with birth preparedness**

The demographic factors that were assessed are age, highest level of education, residence, marital status during pregnancy and delivery, occupation and average monthly income.

##### **4.4.2 Association of age with birth preparedness**

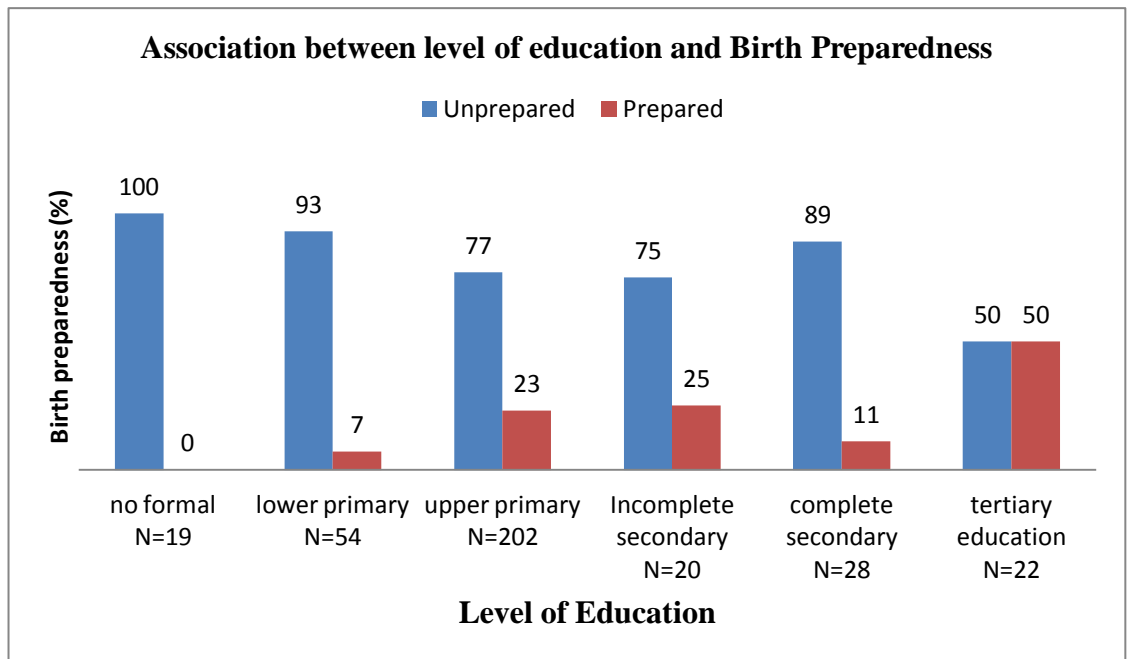
Table 4.2 shows the association of age and birth preparedness. The proportion of women that were prepared for birth was highest at ages 40-44 years (33.3%) while it was lowest at ages 30-34 years (12.8%). At 95% confidence interval, there was no statistical association between age and birth preparedness ( $P=0.364$ ).

**Table 4.2 Association of age to birth preparedness**

Age group in years (N=345)	Unprepared	Prepared	Statistical values
Below 20	25 (78.1%)	7 (21.9%)	$\chi^2 = 5.447$ (5) P = 0.364
20-24	80 (76.9%)	24 (23.1%)	
25-29	65 (80.2%)	16 (19.8%)	
30-34	48 (84.2%)	9 (12.8%)	
35-39	41 (87.2%)	6 (12.8%)	
40-44	16 (66.7%)	8 (33.3%)	

#### 4.4.3 The association of the level of education and birth preparedness

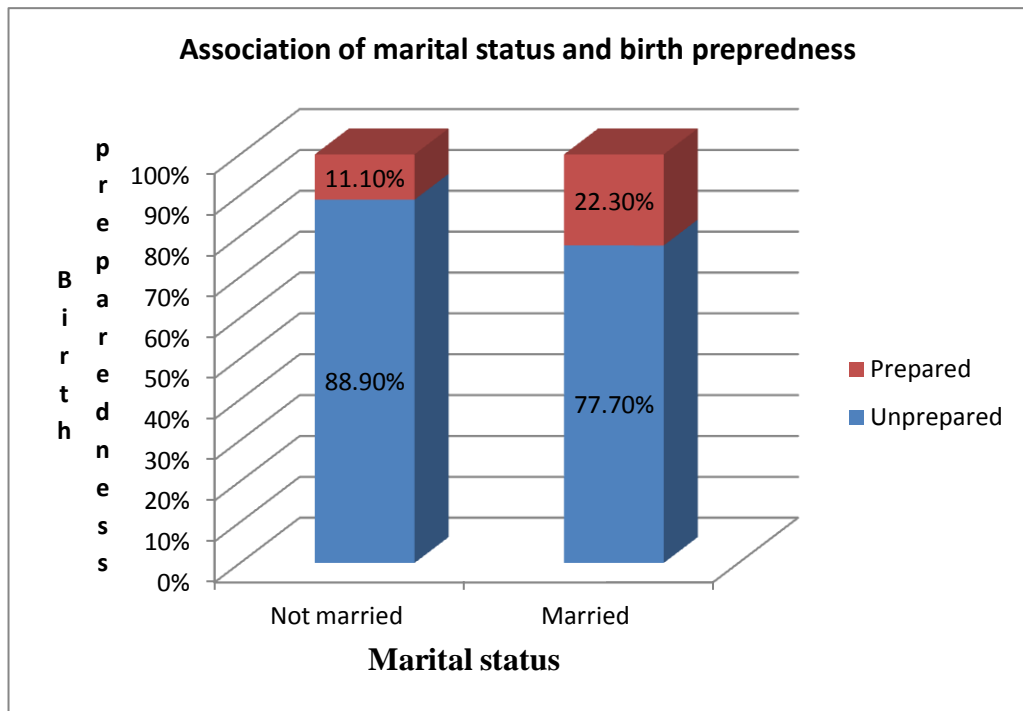
Figure 4.4 shows the association of the level of education and birth preparedness. The proportion of women that were prepared was highest among those with tertiary education (50%) and lowest among those with no formal education. Fishers' exact test was used to test the association of the highest level of education and birth preparedness. There was a statistically significant association at 95% confidence interval ( $\chi^2$  (5) =25.35\*, P= <0.001). The key informant interviews indicated that the level of education influenced the ability and the quality of decisions on birth preparedness. Women with a higher level of education are more able to make better decisions on birth preparedness.



**Figure 4.4: Association of the level of education and birth preparedness**

#### **4.4.4 Association of marital status with birth preparedness**

Figure 4.5 shows the association of marital status and birth preparedness. The women were asked to state their marital status during pregnancy and delivery. This variable was dichotomised into two groups. Women that were married and in union with their spouses were classified “married” and those who were single, separated, divorced and widowed were classified “not married”. The proportion of women prepared for birth was higher (22.3%) among the married than among the unmarried (11.1%). There was a statistically significant association between marital status and birth preparedness at 95% confidence interval ( $\chi^2(1) = 4.015^*$  and the  $p = 0.045$ ). The women in the Focus Group Discussions cited family hindrances to birth preparedness. They cited lack of support from their spouses, divorce, separation and mismanagement of funds by their spouses.



**Figure 4.5: Association of Marital status and birth preparedness**

#### 4.4.5 Association of religion with birth preparedness

Table 4.3 shows the association of religion and birth preparedness. Catholics had a higher proportion (25.7%) of prepared respondents than Protestants (17.8%). At 95% confidence interval, there was no statistically significant association between religion and birth preparedness ( $P=0.09$ ).

**Table 4.3: Association of religion with birth preparedness**

Religion	Unprepared	Prepared	$\chi^2$	Df	P value
Protestant	194 (82.2%)	42 (17.8%)	2.871	1	0.09
Catholic	81 (74.3%)	28 (25.7%)			



#### 4.4.5 Association of type of occupation and birth preparedness

The occupation was grouped as salaried and non-salaried occupation. Table 4.4 shows the association of this variable and the dependent variable. A higher proportion of women (44.4%) on salaried employment was prepared for birth than those on non-salaried employment (19%). At 95% confidence interval, there was a statistically significant association between the type occupation of the respondent and birth preparedness.

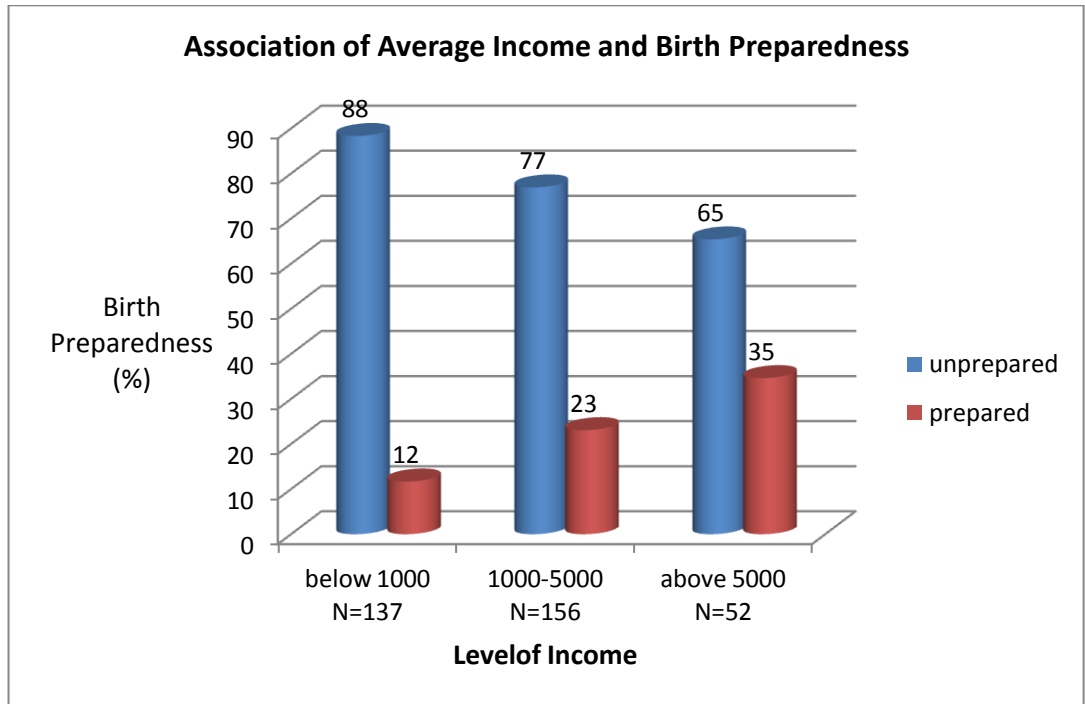
**Table 4.4: Association of type of occupation with birth preparedness**

<b>Type of occupation (n=345)</b>	<b>Unprepared</b>	<b>Prepared</b>	<b>Statistical Values</b>
Non-salaried occupation	265 (81%)	62 (19%)	$\chi^2 = 6.8509^*$ Df= 1 P= 0.009
Salaried occupation	10 (55.6%)	8 (44.4%)	

#### 4.4.6 Association of income and birth preparedness

The respondents were asked to estimate their average monthly income. Figure 4.6 shows the average income per month and its association with birth preparedness. The proportion of women prepared for birth increased as the average monthly income of the women increased. At 95% confidence interval there was a statistically significant association between average monthly income and birth preparedness ( $\chi^2 (2) = 13.63^*$ , P= 0.001). The Key Informant Interviews and Focus Group Discussions indicated that women of low economic status do not find it beneficial to plan because they will not be able to implement

the plans due to financial constraints. The cost of delivering in health facilities was also cited by focus groups as a hindrance to planning to deliver in a health facility. This study was done before the introduction of free maternity services in government facilities.



**Figure 4.6: Association of average monthly income and birth preparedness**

#### 4.5 Demographic determinants of birth preparedness

The variables that had significant association were selected and subjected to logistic regression at 95% confidence interval. Table 4.5 shows the logistic regression of the variables. A variable that was significant was deemed a determinant of birth preparedness. A rise in the level of education in women was 1.5 times more likely to increase birth preparedness (Odds ratio 1.5). Women whose average income was high were 1.6 times more likely to prepare for birth than those with lower income (OR=1.6). Married women were 2.3

times more likely to prepare for birth than unmarried women. Women on salaried occupation were 3.5 times more likely to prepare for birth compared to those on non-salaried occupation. The level of education, occupation, marital status and average monthly income ( $p < 0.05$  on logistic regression) were the demographic determinants of birth preparedness.

**Table 4.5: Logistic regression of socio-demographic determinants**

Variable	Odds ratio	P> z
Level of education	1.4641*	0.001
Marital status	2.3013	0.050
Occupation	3.4193*	0.013
Monthly average income	1.6030*	0.034

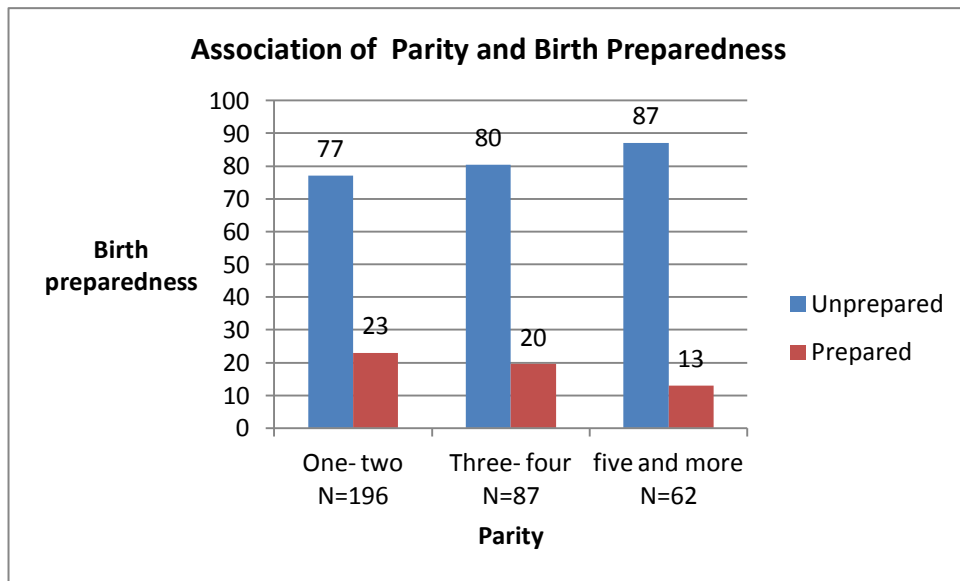
\*significant at 95% confidence interval

#### **4.6 Maternal associated with birth preparedness**

The maternal determinants that were assessed were parity, complication during a previous pregnancy, history of still birth, attendance of ante natal care, trimester of first ante natal care clinic visit and awareness of birth preparedness.

##### **4.6.1 Association of parity and birth preparedness**

The proportion of women that were prepared for birth decreased as the parity increased. Figure 4.7 illustrates the association of birth preparedness and parity. At 95% confidence interval there was no statistically significant association between parity and birth preparedness ( $\chi^2 (2) = 2.985$ ,  $P = 0.225$ ). The key informants indicated that women who have delivered many times do not find it important to plan because their intention is to follow a similar trend.



**Figure 4.7: Association of parity and birth preparedness**

#### 4.6.2 Association of history of still birth and birth preparedness

Table 4.6 shows the association of having a still birth in a previous birth and birth preparedness. Fishers exact was used to test the association. There was a higher proportion of birth preparedness among those who didn't have a still birth (21.8%) than those who had a still birth (6.1%). There was a statistically significant association between history of a still birth and birth preparedness.

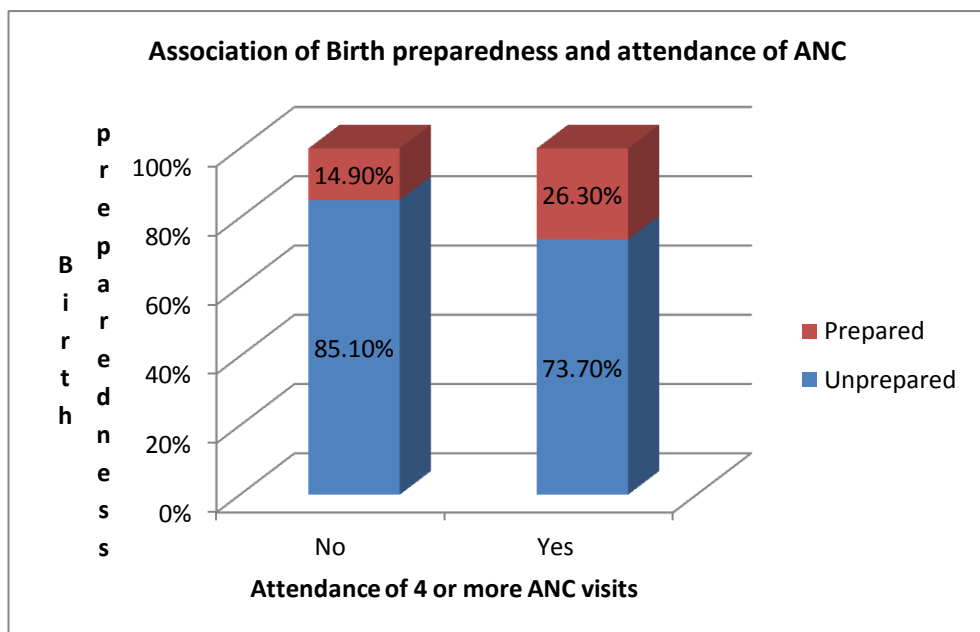
**Table 4.6: Association of previous still birth and the dependent variable**

History of still birth	Unprepared	Prepared	Fishers exact
No	244 (78.2%)	68 (21.8%)	0.038*
Yes	31 (93.9%)	2 (6.1%)	

\*significant at 95% confidence interval

#### 4.6.3 Association of attendance of 4 or more ANC visits and birth preparedness

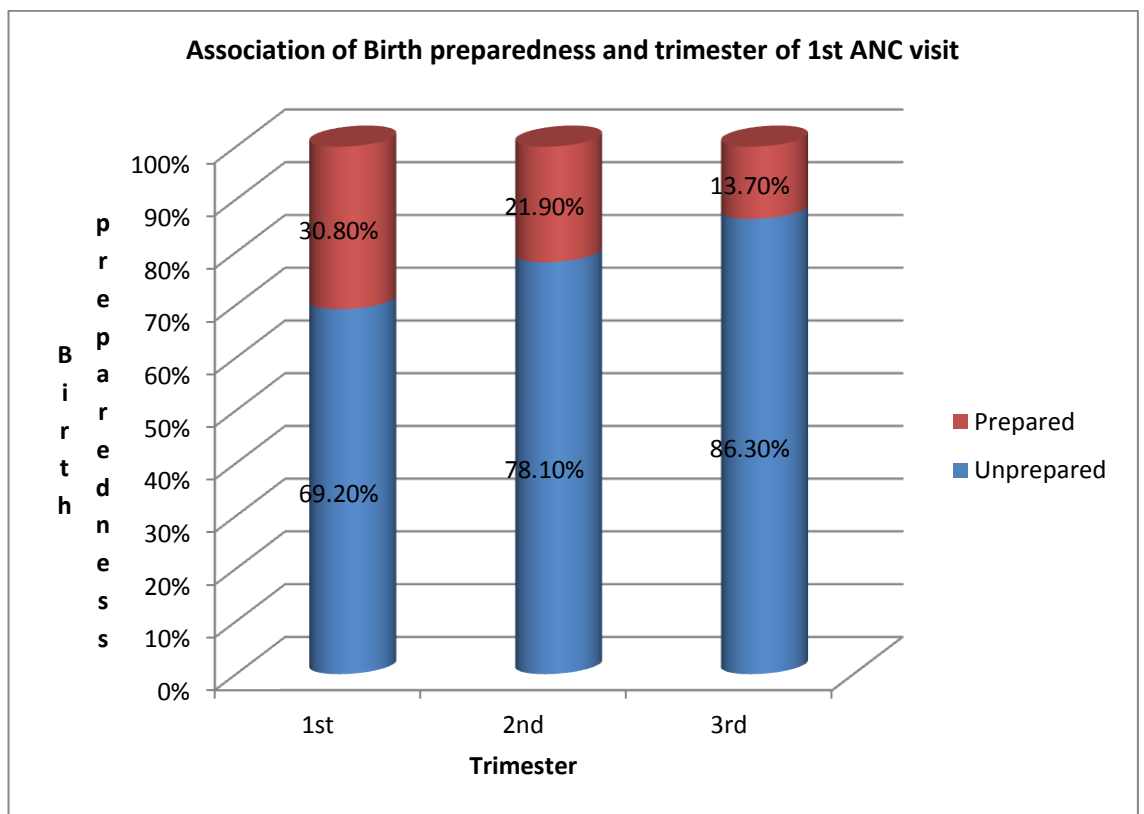
In the focused ante natal care approach, it is recommended that a pregnant woman should attend at least 4 visits. Figure 4.8 shows the association between attendance of four or more ante natal visits and birth preparedness. There was a higher proportion of women that were prepared for birth among those who attended 4 or more ante natal visits (26.3%) compared to those who didn't attend (14.9%). There was a statistically significant association between attendance of four or more ante-natal visits and birth preparedness  $\chi^2 (1) = 8.19^*$ ,  $P = 0.004$ . The key informants indicated that the change of the ante natal care card affected the quality of birth preparedness. The previous maternal health card had a checklist on birth preparedness aspects contrary to the new booklet. There are chances of oversights by the staff because of lack of a reference tool. There exists no monitoring system for the implementation of birth preparedness.



**Figure 4.8: Association of Birth Preparedness and attendance of Ante natal care clinics**

#### 4.6.4 Association of trimester of first ANC visit and birth preparedness

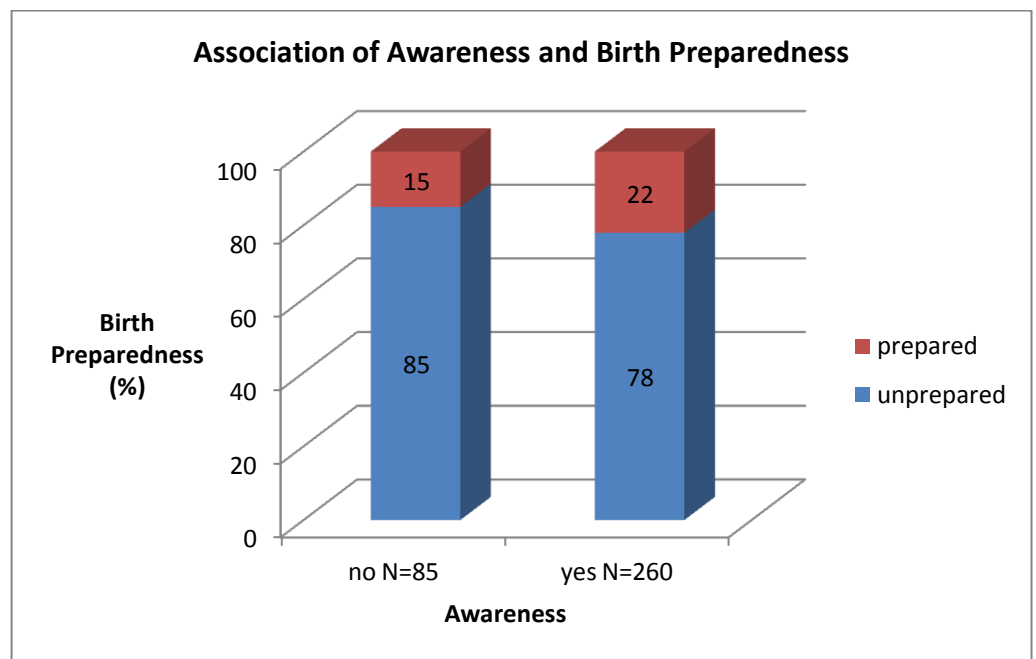
Figure 4.9 shows the association of the trimester of first ANC visit and the birth preparedness. The highest proportion of women that were prepared for birth had their first ANC visit during the first trimester (30.8%). The least prepared had their first visit in the last trimester (13.7%). However, no statistically significant association was found ( $P = 0.097$ ). The key informants indicated that one of the reasons of birth unpreparedness is attending ante natal clinic in the last trimester of their pregnancy.



**Figure 4.9: Association of birth preparedness and trimester of first ANC visit**

#### 4.6.5 Association of awareness on birth preparedness with actual birth preparedness

Figure 4.10 shows the association of awareness on birth preparedness and actual birth preparedness status. The proportion of women that was prepared for birth was higher among those that were aware of birth preparedness (21.9%) than among those who were not aware (15.3%). Using a chi square test at 95% confidence interval, no statistically significant association was found ( $P = 0.187$ ). The key informants indicated that there are no community campaigns on birth preparedness which reduces the awareness of the women on the concept of birth preparedness.



**Figure 4.10: Association of awareness of birth preparedness and actual birth preparedness**

#### 4.7 Maternal determinants of birth preparedness

Table 4.7 illustrates the logistic regression at 95% confidence interval of variables that had association using chi square test. Attendance of ANC for 4 or more visits increased the likelihood of birth preparedness by 2.2 times (OR=2.2). Having a still birth reduced the likelihood of birth preparedness by 0.2 times (OR=0.2).

**Table 4.7: Logistic regression on maternal factors**

Variable	Odds Ratio	P> z
A still birth in a previous delivery	0.226*	0.047
Attendance of 4 or more ANC visits	2.233*	0.005

#### 4.8 Institutional associated with birth preparedness

##### 4.8.1 Association of institutional factors with birth preparedness

Table 4.8 shows the association of institutional factors with birth preparedness. Various institutional factors were assessed. Time taken to reach the nearest health facility and discussion with the health worker did not have any association with birth preparedness when tested using Fisher's exact test. The level of facility attended for ante natal care elicited association with birth preparedness. The levels are as classified in Kenya essential package for health. The area had level two (dispensary), level three (health centre) and four (sub-county hospital). The key informants raised two institutional factors that affect birth preparedness. The first was poor transport network in a context where the distance to the facilities is about 30 kilometres. The second was staffing where shortage of staff was deemed to compromise the quality of time with the clients to guide them on birth preparedness.



**Table 4.8: Association of Institutional factors with birth preparedness**

Variable	Category	Unprepared	prepared	$\chi^2$	Df	P value
Level of facility (n=327)	Two	49 (69%)	22(31%)	9.938*	2	0.007
	Thre e	76 (89%)	9 (11%)			
	Four	133 (77.8%)	38 (22.2%)			
Discussion with health worker (n=260)	No	14 (77.8%)	4 (22.2%)	Fishers exact	1.000	
	Yes	189 (78.1%)	53 (21.9%)			
Time taken to reach the health facility (n=345)	< 1hour	95 (79.2%)	25 (20.8%)		0.319	
	1-2 hours	129 (77.25%)	38 (22.75%)			
	3-5 hours	43 (86%)	7 (14%)			
	>5hours	8 (100%)	0 (0%)			

#### 4.9 Institutional determinants of birth preparedness

The level of facility attended during ante-natal period had association using chi square test and so it was tested using logistic regression. Table 4.9 shows this test. There was no statistically significant influence on birth preparedness ( $p>0.05$ ).

**Table 4.9: Institutional determinants of birth preparedness**

Variable	Odds Ratio	$P> z $
Level of facility attended for ante natal care	0.867	0.391

## **CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Discussion**

#### **5.1.1 Proportion of women that was prepared for birth**

Studies in sub Saharan Africa have found low rates of birth preparedness. High levels of birth preparedness have been shown to be strongly associated with increased levels of use of skilled birth attendants (Jerome, 2010).

In this study the proportion of women who were prepared for birth was 20.3% in a group of 345 women that had delivered within two years prior to the survey. This proportion is lower than findings in a study in Indore city, India by Siddharth et al. (2010) that found it to be at 47.8%, though they had only assessed three instead of the six aspects of birth preparedness. The other reason for the difference could be the setting of the study where Indore is a city with more access to information and the transport network could be better than Tharaka. The facilities of delivery could also be near. Deoki (2009) found a higher proportion of preparedness (47.5%) in the same area of study. Almost the same level of preparedness was found in Adrigat, Ethiopia (22%) (Mihret *et al.*, 2006). The setting of the current study was similar to Adrigat in many in that it is rural and has few health facilities. This could examine explain the similarity of the findings. Jerome *et al.*, (2012) in Mbarara district in Uganda found a higher level of preparedness (35%) though they studied only four aspects of birth preparedness.

This study found out that the aspect of birth preparedness that was least planned for was means of transport to the delivery facility (35%). This agrees with

KDHS 2008/09 (KNBS, 2010) that noted that many women who delivered at home had lack of transport to the facility as the reason. In a similar study in southern Ethiopia (Hailu *et al.*, 2011) identification of means of transport was very low at 7.7%. In a study in Nigeria the aspect was identified by 19.5% of the respondents (Zubairu *et al.*, 2010). This finding in these areas may be related to the poor infrastructural establishments in Africa. There are very options available for planning. Mutiso (2010) found planning for transport as an aspect of birth preparedness to have been very high (84.3%) in a study in Nairobi which may have been due to its urban setting which has better infrastructural establishment.

### **5.1.2 Demographic determinants of birth preparedness**

Age, religion and residence did not have association with birth preparedness. Using Chi square test and Fisher's exact test where the former was not applicable, the level of education, marital status, occupation and average monthly income had statistical association. When these associated variables were subjected to logistic regression, maternal education (OR =1.5), occupation (OR=3.5), marital status (OR=2.3) and monthly average income (OR=1.6) were significant in predicting birth preparedness status.

Married women had a higher likelihood of preparing for birth than those the not married. This may be associated with support in decision making. It may also be associated with social acceptability of pregnancy in a marriage setting and therefore planning for it. This agrees with another study in Ethiopia (Mihret *et al.*, 2006).

A rise in the literacy level of education increased the likelihood of preparing for birth. This may be due to being more informed and ability to make better choices. This finding agrees with other studies like Mutiso (2008) in a study in Kenyatta National Hospital who found literacy to have positively influenced birth preparedness. Kakaire *et al.*, (2011) in a study in Uganda found education as a determinant in birth preparedness.

An increase in average income increased the likelihood of preparing for birth. This relates to the three delays model where the first delay (decision to seek care) is related to socio-economic and cultural factors. A study in Uganda indicated ownership of assets as a predictor of birth preparedness (Kabyenga *et.al.*, 2010). Finances are required for many purposes in delivery; delivery costs in hospital, transport costs, delivery supplies and facilitation of other aspects of birth preparedness.

### **5.1.3 Maternal determinants of birth preparedness**

Parity, maternal or neonatal complications and awareness of birth preparedness were found not to have significant association with the dependent variable. Perceptions on birth preparedness, history of a stillbirth (OR=0.2) and ANC attendance of 4 or more visits (OR=2.2) had significant association. They also had significant prediction on the outcome of the birth preparedness.

Attendance of four or more ANC visits positively influenced birth preparedness. This may be associated with chances of more health worker attention that may lead to education on birth preparedness and follow up. In addition ante natal care is the entry point to birth preparedness. This agrees with a study in southern

Ethiopia that found that availability and utilisation of ante natal services positively influenced birth preparedness (Hailu *et al.*, 2011).

History of a still birth had negative influence on birth preparedness; that is those with a history of still birth, had less likelihood of preparing for birth. This may be associated with the circumstances that lead to still birth like being very far from the facility, lack of transport to the facility, low level of education and low socio-economic status. However this disagrees with a similar study in Ethiopia that found history of still birth to have had a positive influence on birth preparedness (Mihret *et al.*, 2006). This could have been related with a desire to avoid another stillbirth.

A surprising finding was that awareness of birth preparedness and discussion with the health worker on the same did not have association with the dependent variable. This may be related to the quality of health education during ante natal period. It could also be associated with shortage of staff which reduces the health worker client contact time. A related study on the association of knowledge of danger signs in pregnancy with birth preparedness in Uganda also found no association. The researchers related it to poor health education of the mothers during their ante natal visits (Kabyenga, 2010).

#### **5.1.4 Institutional determinants of birth preparedness**

Using Chi square and Fisher's exact test, duration to the nearest health facility and discussion with the health worker did not have association with birth preparedness. The level of facility attended for ante natal care had association but did not influence the birth preparedness status.

## **5.2 Conclusion**

There are many strategies that have been devised to reduce maternal mortality in Kenya and one has been implementation of birth preparedness strategy. Studies have shown that birth preparedness has positive influence in reduction of maternal mortality.

The main objective of this study was to assess the determinants of birth preparedness among women who delivered in the last two years in Tharaka Sub-county.

### **5.2.1 Proportion of women with birth preparedness plans**

This study found out that the birth preparedness among women is low (20.3%). The most planned for aspect finances for delivery expenses (74%) followed by the place of delivery (69%). The least prepared for aspect was mode of transport (35%).

### **5.2.2 Socio- demographic determinants of birth preparedness.**

On the second objective, the socio-demographic determinants that were found to have influence on birth preparedness status were: level of education where an increase in the level of education had positive association with preparedness, occupation where being on salaried occupation increased the likelihood of preparing for birth and average income whose rise increased the likelihood of preparing for birth.

### **5.2.3 Maternal determinants of birth preparedness**

On the third objective, the maternal determinants of birth preparedness were: four or more ante natal visits that had a positive association with preparedness

and history of still birth was associated with reduced likelihood of preparing for birth.

#### **5.2.4 Institutional determinants of birth preparedness**

On the fourth objective, no institutional factors were found to influence birth preparedness.

### **5.3 Recommendations**

Based on the results of this study the following recommendations have been made;

1. The ministry of health should do a sensitization on birth preparedness among women of reproductive age.
2. The ministry of health should improve the level of birth preparedness through quality ante natal care.
3. The government through all relevant ministries should put in place strategies to increase the average income of the women and households.
4. The ministry of health should upscale the attendance of ante natal care to a minimum of four visits per pregnancy.

### **5.4 Suggested areas for further research**

The following areas have been suggested for further research.

1. Determinants of utilisation of birth preparedness strategy among health care providers in Kenya.
2. The outcomes of utilisation of birth preparedness by women in rural Kenya.

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## APPENDICES

### APPENDIX 1: QUESTIONNAIRE

#### Consent form

I am Eliphas Gitonga Makunyi. I am carrying out this thesis for award of Masters Degree in Kenyatta University in public health (monitoring and evaluation track). The topic is Determinants of birth preparedness among women among women who delivered in the last two years attending maternal/child health clinics in Tharaka sub-county.

Your participation is on voluntary basis. You can choose to participate or not without necessarily giving reasons for your actions. You are also free to pullout of the study at any point.

As information is anonymised, the researcher conducting this study cannot identify you by name in any reports using information obtained from this study so your confidentiality as a participant will remain secure. There are no direct individual benefits of participation but after the analysis the community can benefit through implementation of the recommendations. This study will be through interviews and focus group discussion and there be no invasive procedures, specimen collection or any tests, therefore there minimal risks. A feedback will be given once the research is complete as a report to the heads of facilities and in a discussion forum for the community groups.

In case you need more clarifications feel free to contact me (principal investigator) on 0721 406609 or [eliphasg@gmail.com](mailto:eliphasg@gmail.com), Dr. Margaret Keraka (supervisor), on 0721817521 Dr. Peter Mwaniki (supervisor) on 0722429596. You can also contact Kenyatta University ethics committee [kuerc.chairman@ku.ac.ke](mailto:kuerc.chairman@ku.ac.ke),

[kuerc.secretary@ku.ac.ke](mailto:kuerc.secretary@ku.ac.ke) 0207803312 P. O. Box 43884-00100, Nairobi. If you understand and agree to take part in this study please sign the space given below.

Participant sign\_\_\_\_\_

V001: Respondents ID.....

### **Section A: Demographic data**

Q1. Age of the respondent (in years) \_\_\_\_\_

Q2. Highest level of education of the respondent

- 1 No formal education
- 2 Lower primary education
- 2 Upper primary education
- 3 Incomplete secondary education
- 4 Complete secondary education
- 5 Tertiary college

Q3. Marital status during pregnancy and delivery

- 1 Never married
- 2 Married
- 3 Separated
- 4 Divorced
- 5 Windowed

Q4. Religion of the respondent

- 1 Protestant
- 2 Catholic
- 3 Muslim
- 4 others (specify).....

Q5. Occupation of the respondent	Q6. Occupation of the spouse/partner (if applicable)
<ol style="list-style-type: none"> <li>1 House wife</li> <li>2 Subsistence farmer</li> <li>3 Salaried employment</li> <li>4 Unemployed</li> <li>5 Business lady</li> <li>6 others (specify).....</li> </ol>	<ol style="list-style-type: none"> <li>1 Subsistence farmer</li> <li>2 Unemployed</li> <li>3 Salaried employment</li> <li>4 Business</li> <li>5 others (specify)</li> <li>6 Not applicable</li> </ol>

Q7. What is your estimate average income per month?\_\_\_\_\_

Q8. Residence

1= Rural

2= Urban

Q9. How long does it take to reach your nearest delivery health facility using your common means of transport?

- 1 =less than one hour
- 2 =1-2 hours
- 3 =3-5 hours
- 4 =more than 5 hours

Q10. What is your common mode of transport to the health facility?

- 1 public transport
- 2 private vehicle
- 3 motorbike
- 4 on foot
- 5 others (specify)\_\_\_\_\_

Q11. How far is your home from the health facility that provides non operative delivery services?

- 1= Less than 2Km
- 2= 2-5Km
- 3= 5-10km
- 4= More than 10km

Q12. How long does it take to reach the health facility that provides non operative delivery services?

- 1= less than 1 hour
- 2= 1-5 hours
- 3= more than 5 hours

Q13. How far is your home from a facility that can offer operative delivery services?

- 1 = Less than 5km
- 2 = 5-10km ``
- 3 = 10-20km
- 4 = 20-30km
- 5 = More than 30km

#### **Section B: Maternal and related factors that affect birth preparedness**

Q14. How many completed months have passed since you gave birth?\_\_\_\_\_

Q15. How many times have you been pregnant? \_\_\_\_\_

Q16. How many times have you given birth? \_\_\_\_\_

Q17. Have ever given birth to a still birth?

- 1 =Yes
- 2 =No

Q18 (a) have ever developed any complication from any of your deliveries?

- 1 = Yes
- 2 =No

Q18 (b) if yes in (a) above,  
specify.....

Q19 (a) have any of your babies ever developed any complications after delivery?

1 = Yes

2 = No

Q19 (b) if yes in (a) above

specify.....

Q20. How many times did you attend ante-natal clinics in the last pregnancy.....

Q21. At what month of pregnancy did you start attending ante natal clinic.....

Q22. You made most of most your ante-natal care visits in which facility (Enter facility code).....

### Section C: Birth preparedness

Q23. (a) Have you heard of birth preparedness?

1= Yes

2= No

Q23 (b) did the health worker discuss with you birth preparedness during any of your ante natal visits?

1 yes

0 no

Q24 (a) which was your identified place of birth for the last baby?	Q24 (b) Where did you deliver?
1= health facility 2=home 3=not identified	1= health facility 2=home
Q25 (a) Which was your identified/planned source of money for delivery expenses?	Q25 (b) What was the source of the money for delivery?
1= Own savings 2= Spouse 3= Insurance 4= another relative 5= other (specify) 6= not identified	1= Own savings 2= Spouse 3= Insurance 4= another relative 5= other (specify) 6= waiver
<b>Q26 (a) What was your identified mode of transport to the health facility?</b>	<b>Q26 (b) How did you travel to the health facility for delivery?</b>
1= On foot 2= Public service vehicles 3=privately booked vehicle 4= motorbike 5=others (specify)..... 6=not identified	1= On foot 2= Public service vehicles 3=privately booked vehicle 4= motorbike 5=others (specify)..... 6= did not travel

<b>Q27 (a) who did you identify as a birth attendant?</b>	<b>Q27 (b) who attended you during your last birth?</b>
1 =skilled birth attendant 2 =traditional birth attendant 3 =not identified	1 =skilled birth attendant 2 =traditional birth attendant
<b>Q28 (a) Who was your identified birth companion?</b>	<b>Q28 (b) Who accompanied you to the delivery facility?</b>
1= spouse/partner 2= relative (not spouse/partner) 3= others (specify)..... 4= not identified	1= spouse/partner 2= relative (not spouse/partner) 3= others (specify)..... 4= no one
<b>Q29 (a) Who was the identified home caretaker during the time of delivery?</b>	<b>Q29 (b) who took care of your home during the time of delivery?</b>
1= spouse/partner 2= relative (not spouse/partner) 3= others (specify)..... 4= not identified	1= spouse/partner 2= relative (not spouse/partner) 3= others (specify)..... 4= no one

Q30. Was your birth plan written?

1 =Yes                      2 =No

### Q31. Perception of birth preparedness by the mothers

Aspect/Scale	1. Very strongly agree	2. Strongly agree	3. Agree	4. Disagree	5. Strongly disagree	6. Very strongly disagree
Birth preparedness is not useful						
Birth preparedness can reduce pregnancy related complications						
Birth preparedness is not practical						

**Appendix 2: Focus group discussion guide**

1. What is the importance of birth preparedness?
2. How do women prepare for birth/delivery in this area?
3. Which social factors influence birth preparedness?
4. Which challenges affect utilization of birth preparedness?



**Appendix 3: Key informant interview guide**

1. Which experiences do you have in your delivery of services to pregnant women that relate to birth preparedness?
2. When was the concept of birth preparedness introduced in Tharaka sub-county?
3. Would you describe how the strategy was introduced in reference to stakeholder involvement?
4. Is there a monitoring system for the implementation?
5. Which interventions have been put in place to ensure birth preparedness among the clients?
6. Which factors that influence birth preparedness in Tharaka sub-county?

## Appendix 4: Ethical approval letter



### KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575  
Email: [kuerc.chairman@ku.ac.ke](mailto:kuerc.chairman@ku.ac.ke)  
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P. O. Box 43844  
Nairobi, 00100  
Tel: 8710901/12  
Tel: 8710901/12

Our Ref: KU/R/COMM/51/83

Date: October 2<sup>nd</sup> 2012

Eliphas Gitonga Makunyi  
School of Public Health  
Kenyatta University  
P.O. Box 43844, Nairobi.

Dear. Mr. Makunyi,

APPLICATION NUMBER PKU/061/I54 OF 2012 – ‘DETERMINANTS OF BIRTH PREPAREDNESS AMONG WOMEN IN THARAKA DISTRICT’, THARAKA NITHI COUNTY, KENYA - *VERSION 2*

---

#### 1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic, *Determinants of Birth Preparedness Among Women in Tharaka District, Tharaka Nithi County, Kenya - version 2*, dated 2<sup>nd</sup> October 2012.

#### 2. APPLICANT

Eliphas Gitonga Makunyi  
School of Public Health  
Kenyatta University  
P.O. Box 43844, Nairobi.

#### 3. SITE

Tharaka District, Tharaka Nithi County – Kenya.

#### 4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines, and is of the view that against the following elements of review,

- (i) Scientific design and conduct of study,
- (ii) Recruitment of research participant,
- (iii) Care and protection of research participants,
- (iv) Protection of research participant's confidentiality,
- (v) Informed consent process,
- (vi) Community considerations.

AND APPROVED that the research may proceed for a period of ONE year from 2<sup>nd</sup> October, 2012.

5. ADVICE/CONDITIONS


- i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
- ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.
- iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

  
PROF. NICHOLAS K. GIKONYO  
 CHAIRMAN ETHICS REVIEW COMMITTEE

I Eliphas Gitau accept the advice given and will fulfill the conditions therein.

Signature  Dated this day 2nd of October 2012.

cc. Vice-Chancellor  
 Director: Institute for Research Science and Technology

## Appendix 5: Authority to carry out research

REPUBLIC OF KENYA



### NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349  
254-020-310571, 2213123, 2219420  
Fax: 254-020-318245, 318249  
when replying please quote  
secretary@ncst.go.ke

P.O. Box 30623-00100  
NAIROBI-KENYA  
Website: www.ncst.go.ke

Our Ref:

NCST/RCD/12A/012/153

Date:

11<sup>th</sup> October 2012

Eliphas Gitonga Makunyi  
Kenyatta University  
P.O.Box 43844-00100  
Nairobi.

#### RE: RESEARCH AUTHORIZATION

Following your application for authority dated 4<sup>th</sup> October, 2012 to carry out research on "*Determinants of birth preparedness among women in Tharaka District, Tharaka Nithi County, Kenya,*" I am pleased to inform you that you have been authorized to undertake research in Tharaka District for a period ending 31<sup>st</sup> December, 2013.

You are advised to report to the District Commissioner, the District Education Officer and the District Medical Officer of Health, Tharaka District before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

DR M.K. RUGUTT, PhD, HSC.  
DEPUTY COUNCIL SECRETARY

Copy to:

The District Commissioner  
The District Education Officer  
The District Medical Officer of Health  
Tharaka District.

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development".

## Appendix 6: Map of the area

