

**DELIVERY PRACTICES AND ASSOCIATED FACTORS AMONG MOTHERS  
ATTENDING MCH CLINICS AT SELECTED HEALTH FACILITIES IN  
NYANDARUA SOUTH DISTRICT, CENTRAL KENYA**

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**A thesis submitted in partial fulfillment for the degree of Master of Science in Public  
Health in the Jomo Kenyatta University of Agriculture and Technology.**

**2010**

## DECLARATION

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

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## **DEDICATION**

I dedicate this thesis to my parents Mr. and Mrs. Kagia, Chris, brother Edwin, sisters Mary and Margaret for their endless love, support, and encouragement during this study.

## **ACKNOWLEDGEMENTS**

This work would not be accomplished without the assistance of several people who deserve special mention for their support. Above all, glory is to God for it was through him all was made possible. My special thanks goes to my supervisors Professor Zipporah Ng'ang'a and Dr. Gabriel Mbugua for their special role of tirelessly guiding me through the entire study. My deep appreciation goes to Dr. E Mathenge for his invaluable support and always taking his time to read through each draft of my work with unwavering motivation.

I sincerely wish to thank Mrs. Jane Ngugi of KARI for taking her time to guide me through the data collection procedures. I sincerely thank Mr. Nahashon Thumbi and Mr. Moses Mwangi for their assistance especially in data coding and analysis. Special thanks to Nicholas Njau and Christopher Kinyanjui for their support. To Mr. Simon Mbugua of Newborn health project Kijabe for seeing me through the data collection process, thank you. I am particularly grateful to my relatives and friends whose encouragement and prayers kept me going. I am indebted to all the ministry of health staff at Nyandarua District Hospital and Njabini Health Centre who participated and gave moral support during data collection and all the mothers who took their time to share information.

Finally, my gratitude goes to the management of Jomo Kenyatta University of Agriculture and Technology and KEMRI for giving me the chance which finally enabled me to undertake this research. To all of you and many others who have not been mentioned here, God bless you.

## TABLE OF CONTENTS

<b>DECLARATION.....</b>	<b>ii</b>
<b>DEDICATION.....</b>	<b>iii</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>iv</b>
<b>TABLE OF CONTENTS .....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>ix</b>
<b>LIST OF FIGURES .....</b>	<b>xi</b>
<b>LIST OF APPENDICES .....</b>	<b>xii</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>xiii</b>
<b>DEFINITION OF TERMS.....</b>	<b>xv</b>
<b>ABSTRACT.....</b>	<b>xvii</b>
<b>CHAPTER ONE</b>	
<b>1.0 INTRODUCTION.....</b>	<b>1</b>
1.1 Background Information.....	1
1.2 Statement of the Problem.....	4
1.3 Justification.....	6
1.4 Objectives .....	8
1.4.1 General Objective .....	8
1.4.2 Specific Objectives .....	8

## **CHAPTER TWO**

<b>2.0 LITERATURE REVIEW .....</b>	<b>9</b>
2.1 Causes of Maternal Mortality .....	9
2.2 Safe Motherhood Initiative .....	10
2.3 Skilled Attendance at Birth.....	12
2.4 Role of Traditional Birth Attendants in Child Birth .....	15
2.5 Perceptions on Pregnancy and Child Birth among Mothers.....	17
2.6 Improving Maternal Health.....	18

## **CHAPTER THREE**

<b>3.0 MATERIALS AND METHODS .....</b>	<b>23</b>
3.1 Study Area .....	23
3.2 Study Design.....	24
3.3 Study Population.....	24
3.3.1 Inclusion Criteria .....	24
3.3.2 Exclusion Criteria .....	24
3.4 Sampling .....	25
3.5 Sample size determination .....	25
3.7 Data Management and Analysis .....	27
3.7.1 Data Storage.....	27
3.7.2 Data Management .....	27
3.8 Ethical Considerations .....	29

## **CHAPTER FOUR**

<b>4.0 RESULTS .....</b>	<b>31</b>
4.1 Selected socio-demographic and economic characteristics of respondent mothers ..	31
4.1.1 Age of respondents .....	31
4.1.2 Marital Status of mothers.....	31
4.1.3 Highest level of education attained among mothers and their spouses .....	32
4.1.4 Religious affiliation of mothers .....	33
4.1.5 Number of deliveries among mothers.....	33
4.1.8 Sources of income among the mothers .....	38
4.2 Accessibility to Health Facilities Providing Maternity Services .....	39
4.2.1 Distance to health facility .....	39
4.2.2 Mode of transport to the nearest maternity facility.....	39
4.3 Delivery Practices among Mothers.....	41
4.3.1 Delivery Attendance .....	41
4.3.2 Delivery Preparedness among Mothers .....	47
4.3.3 Utilization of Antenatal Services among Respondent Mothers.....	48
4.3.4 Sources of information on safe delivery among the mothers .....	50
4.4 Perception of Mothers on Birth Attendants and Place of Delivery .....	51
4.5 Mothers' Satisfaction with Maternity Services.....	56
<b>4.6 Relationship of Selected Factors with the Delivery Practice among the Respondent Mothers .....</b>	<b>61</b>

4.6.1 Bivariate analysis; Chi-square test.....	61
4.6.2 Multivariate analysis.....	66
<b>CHAPTER FIVE</b>	
<b>5.0 DISCUSSION .....</b>	<b>68</b>
5.1 Limitations of the Study.....	82
<b>CHAPTER SIX</b>	
<b>6.0 CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>83</b>
6.1 Conclusions.....	83
6.2 Recommendations.....	85
<b>REFERENCES.....</b>	<b>87</b>
<b>APPENDICES .....</b>	<b>93</b>



## LIST OF TABLES

<b>Table 4.1.1.</b>	Selected socio- demographic characteristics of the mothers.....	35
<b>Table 4.1.2.</b>	Socio economic characteristics of the mothers .....	37
<b>Table 4.1.3.</b>	Distribution of sources of income among the mothers .....	38
<b>Table 4.1.4.</b>	Distribution of the wealth score .....	39
<b>Table 4.2.1.</b>	Accessibility factors to health facilities providing maternity services among the mothers .....	40
<b>Table 4.2.2.</b>	Distribution of place of attendance by distance to the nearest health facility .....	41
<b>Table 4.3.1.</b>	Distribution of deliveries by attendant .....	42
<b>Table 4.3.2.</b>	Distribution of delivery practice based on first and last delivery .....	42
<b>Table 4.3.3.</b>	Distribution of places of delivery by first and last delivery .....	44
<b>Table 4.3.4.</b>	Distribution of delivery safety by place of delivery .....	44
<b>Table 4.3.5.</b>	Reasons for mothers' choice of delivery place .....	45
<b>Table 4.3.6.</b>	Distribution of modes of payment by place of delivery among mothers ...	47
<b>Table 4.3.8.</b>	Place of Antenatal clinic attendance and Antenatal care advice on safe delivery .....	50
<b>Table 4.4.1.</b>	Willingness and reasons for health facility based delivery among mothers .. .....	52
<b>Table 4.4.2.</b>	Reasons for home delivery among the mothers .....	53
<b>Table 4.4.3.</b>	Dangers associated with home delivery among mothers .....	55

<b>Table 4.4.4.</b>	Existence of religious beliefs among mothers in the community .....	55
<b>Table 4.4.5.</b>	Similarity in delivery attendance between birth attendants at home and at health facilities .....	56
<b>Table 4.5.1.</b>	Areas of dissatisfaction with type of service at various health facilities providing maternity services among respondent mothers.....	57
<b>Table 4.5.2.</b>	Areas of improvement by types of health facility as proposed by the mothers .....	59
<b>Table 4.6.1.</b>	Relationships of selected factors with delivery practice among the mothers .....	64
<b>Table 4.6.2.</b>	Mean estimates of mothers' age, number of deliveries and wealth score mothers by delivery practice .....	65
<b>Table 4.6.3.</b>	Logistic regression predicting delivery practices from total number of deliveries in a lifetime, place of attendance and mother's perception on skilled and unskilled attendants .....	67

## LIST OF FIGURES

<b>Figure 4.1.1.</b>	Marital status of mothers by age category .....	32
<b>Figure 4.1.2.</b>	Distribution of mothers and their spouses according to highest level of education attained.....	33
<b>Figure 4.1.3.</b>	Distribution of number of live births by age of the mother .....	34
	among the mothers .....	40
<b>Figure 4.3.1.</b>	Distribution of first and last deliveries by place of delivery .....	43
<b>Figure 4.3.2.</b>	Antenatal clinic attendance among respondent mothers .....	49

## **LIST OF APPENDICES**

<b>APPENDIX I.</b>	MAP OF NYANDARUA SOUTH DISTRICT AND ITS POSITION IN THE NATIONAL CONTEXT .....	93
<b>APPENDIX II.</b>	INFORMED CONSENT EXPLANATION AND CONSENT FORM .	94
<b>APPENDIX III.</b>	QUESTIONNAIRE.....	102
<b>APPENDIX IV.</b>	FGD GENERAL INTRODUCTION & GUIDE .....	112
<b>APPENDIX V.</b>	IN-DEPTH INTERVIEW GUIDE FOR THE HEALTH WORKERS	116
<b>APPENDIX VI.</b>	ETHICAL REVIEW COMMITTEE APPROVAL .....	117

## **LIST OF ABBREVIATIONS**

<b>AIDS</b>	Acquired Immuno-deficiency Syndrome
<b>ANC</b>	Antenatal Care
<b>ARC</b>	Aids Related Conditions
<b>CBR</b>	Crude Birth Rate
<b>DFID</b>	Department for International Development
<b>FCI</b>	Family Care International
<b>FGD</b>	Focus Group Discussion
<b>HIV</b>	Human Immunodeficiency Virus
<b>HMIS</b>	Health Management Information System
<b>IAG</b>	Inter Agency Group
<b>ICPD</b>	International conference on Population and Development
<b>IDIs</b>	In-depth Interviews
<b>IEC</b>	Information, Education & Communication
<b>INGOS</b>	International Non-governmental Organizations
<b>KDHS</b>	Kenya Demographic Health Survey
<b>KSPAS</b>	Kenya Service Providers Assessment Survey
<b>MCH</b>	Maternal Child Health
<b>MDGs</b>	Millennium Development Goals
<b>MDR</b>	Maternal Death Review
<b>MMR</b>	Maternal Mortality Rates/Ratio

<b>MNPI</b>	Maternal & Neonatal Programme Efforts & Index
<b>MOH</b>	Ministry of health
<b>NHIF</b>	National Health Insurance Fund
<b>NSDSP</b>	Nyandarua South District Strategic Plan
<b>PMNCH</b>	Partnership for Maternal, Newborn and Child Health
<b>PNC</b>	Postnatal Care
<b>PRB</b>	Population Reference Bureau
<b>RH</b>	Reproductive Health
<b>SMI</b>	Safe Motherhood Initiative
<b>SMN</b>	Safe Motherhood Newsletter
<b>SPSS</b>	Statistical Package for Social Sciences
<b>TBA</b> s	Traditional Birth Attendants
<b>TFR</b>	Total Fertility Rate
<b>UN</b>	United Nations
<b>UNICEF</b>	United Nations Children’s Fund
<b>UNFPA</b>	United Nations Population Fund Agency
<b>WB</b>	World Bank
<b>WHO</b>	World Health Organization

## **DEFINITION OF TERMS**

### **Delivery Practices**

Mothers' habitual activities in preparation for delivery and their preferred choice of the birth attendant

### **Health facility**

A health centre responsible for a defined population, and for providing or supervising all the curative, preventive and promotive health activities within that population

### **Maternal Child Health (MCH) Clinic**

A centre within a health facility responsible for providing antenatal and postnatal care to mothers as well as curative and preventive services to the newborn babies and children

### **Maternity Care**

Care given to a mother by skilled personnel during labor, child birth and puerperium

### **Perception**

A process involving beliefs, ideas, observation and feelings by which human beings interpret and organize sensation. It best describes one's ultimate experience of the world and dispositions to act in certain ways

**Safe delivery/ skilled attendance**

Delivery attended by skilled health personnel/attendant

**Skilled health personnel/attendant**

A medically qualified provider with midwifery skills (midwife, nurse or doctor) who has been trained to proficiency in the skills necessary to manage normal deliveries and diagnose, manage, or refer obstetric complications.. Does not include Traditional Birth Attendants (TBAs)

**Socioeconomic status (SES)**

An economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position relative to others, based on income, education, and occupation

**TBA**

Traditional, independent (of the health system), non-formally trained and community-based providers of care during pregnancy, childbirth and the postnatal period

**Unskilled attendance**

Delivery attended by unskilled health personnel (medically unqualified provider)



## **ABSTRACT**

A measure of the proportion of deliveries assisted by skilled attendants is one of the indicators of progress towards Millennium Development Goal (MDG) 5, which aims at improving maternal health. In Kenya, the proportion of deliveries attended by skilled attendants is estimated at 42% which is far below the MDG 5 targets which aims to assure that 90% of deliveries are attended by skilled attendants by 2015. The main objective of this study was to establish delivery practices and associated factors among mothers attending Maternal Child Health (MCH) clinics at selected health facilities in Nyandarua South district. A cross-sectional descriptive study whose study population comprised of mothers attending MCH clinics at the district and sub-district hospitals was undertaken. A total of 409 mothers systematically sampled on alternate visiting days were recruited into the study and personal interviews carried out using a semi-structured questionnaire. In each of the facilities, additional qualitative data was obtained using Focus Group Discussions (FGDs) with a group of mothers and In-depth Interviews (IDIs) with selected key informants. Univariate, bivariate and multivariate analysis of data was carried out. Of the 1170 deliveries reported, 48.2% were attended by skilled attendants. Utilization of safe delivery practice was significantly influenced by the total number of deliveries a mother had in a lifetime (parity), place of delivery and perception of mothers on birth attendants. Increase in total number of deliveries in a lifetime was associated with increased probability of practicing unsafe delivery (OR 1.5, 95% CI 1.2–2.0). Majority of the deliveries, 38.6% (452) attended by unskilled attendants were by neighbors and/or

relatives. TBAs attended 1.5% (17) of the deliveries. 11.7% (137) of the deliveries were not attended in which case the mother delivered alone. There was a significant association between first and last places of delivery ( $P < 0.001$ ). There was more than three times chance that a mother will deliver in the same place they delivered during their first delivery (OR 3.9). There was a significant association between delivery safety and place of delivery ( $P < 0.001$ ). Majority of the home deliveries were unsafe (90.3%). However, 72.9% of the mothers perceived medically trained birth attendants in health facility to be more skilled in attending to deliveries than birth attendants at home (TBAs, relatives & friends). Based on all variables, 77.9% (279) of the respondent mothers were dissatisfied with health facility delivery services. Results from this study suggest that the overall rate of skilled attendance among the mothers in this study was low. There is need to create awareness of risks involved in home deliveries among mothers. In order to increase the number of mothers utilizing maternity services, the government through the Ministry of Health should increase women's access to maternal health services especially in rural areas as well as improve service delivery through improving staffing in the health facilities.

## **CHAPTER ONE**

### **1.0 INTRODUCTION**

#### **1.1 Background Information**

Each year, approximately 536,000 women die from complications related to pregnancy and childbirth, with 99% (533,000) of these deaths occurring in Africa and Asia. Slightly more than half of these deaths (270 000) occur in sub-Saharan Africa (WHO/UNICEF/UNFPA/WB, 2005).

The maternal mortality rate (MMR), which measures the number of deaths to women per 100,000 live births due to pregnancy-related complications is highest among the developing regions. In sub-Saharan Africa, MMR is at 900 maternal deaths per 100,000 live births, followed by South Asia (490), Oceania (430), South-Eastern Asia (300), Western Asia (160), North Africa (160), Latin America, the Caribbean (130), and Eastern Asia has the lowest among the developing regions with MMR of 50/100,000 live births (WHO/UNICEF/UNFPA/WB, 2005). The adult lifetime risk of maternal death (the probability that a 15-year-old female will die eventually from a maternal cause) is highest in Africa (1 in 26), followed by Oceania (1 in 62) and Asia (1 in 120), while the developed regions had the smallest lifetime risk (1 in 7300). Worldwide, there was a 5.4% decline in MMR between 1990 and 2005. Eastern Asia had the largest decline of 47.1%, as opposed to 1.8% in sub-Saharan Africa (DFID, 2007).

Unlike the other MDG regions, sub-Saharan Africa experienced an increase in the number of maternal deaths (from 212 000 in 1990 to 270 000 in 2005) with a concomitant increase in the number of live births (from 23 million in 1990 to 30 million in 2005) resulting in the negligible change in MMR from 1990 to 2005 (WHO/UNICEF/UNFPA/WB, 2005). To make the achievement of the fifth MDG a reality, MMR will have to decrease at a much faster rate especially in sub-Saharan Africa, where the annual decline has so far been about 0.1% (DFID, 2007). In 2003, the Kenya Demographic and Health Survey (KDHS) reported MMR of 414/100,000 (KDHS, 2003). In 2008, a study carried out in Nairobi slums showed that the MMR was 557/100,000 live births (Ziraba *et al.*, 2008).

One of the 8 goals adopted by the Kenyan government is Millennium Development Goal 5 (MDG 5) on improvement of maternal health which is aimed at assisting in formulation of maternal health policy and the evaluation of programmes intended to improve the well being and survival prospects of pregnant mothers by the year 2015. Implementation of maternal health policy however lags behind especially in ensuring that wise intentions are translated into high-quality, accessible services and programs at the local level (MNPI, 2005). MDG 5 targets to reduce maternal mortality ratio by 75%, between 1990 and 2015. Indicators of progress in this case being: Maternal Mortality Ratio (MMR) and proportion of births attended by skilled health workers

Efforts to reduce maternal mortality and morbidity must also address societal and cultural

factors that affect women's health and their access to services. Women's low status in society, lack of access to and control over resources, limited educational opportunities, poor nutrition, and lack of decision-making power contribute significantly to adverse pregnancy outcomes (KSPAS, 2004). Inadequate access to integrated, affordable and quality reproductive health (RH) services especially by youth and adolescents, unplanned pregnancies, little male participation in RH issues and unsafe motherhood have been reported to influence provision of reproductive health services in the Nyandarua South district strategic plan (NSDSP, 2008-2010).

This study collected data on delivery practices and associated factors in order to provide understanding on the factors influencing utilization of available safe delivery services in Kenya. This will guide policy in improving safe pregnancy and delivery with an aim of reducing maternal mortality and morbidity.

## **1.2 Statement of the Problem**

Pregnancy and its related complications, remains one of the major causes of morbidity and mortality in sub-Saharan Africa. Every year over 250,000 African women die due to complications related to pregnancy and childbirth (DFID, 2007). The global burden of maternal mortality is concentrated in developing countries with sub-Saharan Africa accounting for 47% of all maternal deaths reported worldwide (WHO, 2004). In Kenya, it is estimated to be at 414/100,000 live births (KDHS, 2003) and is of public health concern. Maternal and Child Health (MCH) care is linked to access to health care services (MOH, 2008). Though there exists fairly accessible health facilities in Nyandarua South district, over 50% of deliveries are recorded to take place at home under the assistance of unskilled birth attendants (NSDSP, 2008-2010). The projected population for 2009 of women in the reproductive age group (15-49 years) is 11,655. According to Nyandarua South district's fact sheet, 39.2% of these women would be expected to be pregnant. Of this, 53% would deliver at home that is approximately 2,421 home deliveries mostly assisted by unskilled attendants (NSDSP, 2008-2010).

This level of utilization of unskilled attendants at birth appears unacceptably high for a district in central province and neighboring the capital city where modern maternity services can be accessed. The type of assistance that a mother receives during the birth of her child has health implications for both the mother and her child (KSPAS, 2004). Some of the factors associated with mothers' choice of delivery place are maternal age at delivery, education, ignorance, gender inequality, cultural and religious beliefs, access to

health facility and poverty. These factors differ from community to community. Despite the knowledge of some of these factors, Kenya's maternal mortality rate continues to be unacceptably high with 11,000 women and girls dying each year due to preventable, pregnancy-related complications (MNPI, 2005). This calls for site specific studies into the mothers' preferred delivery place and type of attendance during birth in the community and the factors influencing utilization of safe delivery services. This will help in designing appropriate, informed strategies/interventions to ensure safe delivery practices.

### **1.3 Justification**

One of the Millennium Development Goals (MDGs) adopted by the United Nations in 2000 aims at reducing the maternal mortality rate by three-quarters between 1990 and 2015. This has been adopted by the Ministry of Health in Kenya in an effort to reduce Maternal Mortality in the country which was reported at 414 maternal deaths/100,000 live births (KDHS, 2003). The government has adopted a policy on maternal health and put up MCH clinics in most health centers with an aim of promoting safe pregnancy and delivery. However, out of the approximated 90% of pregnant women in Kenya seen by professional health providers at least once through antenatal care clinic, only half receive professional skilled attendance at birth, with the majority delivering at home under unskilled attendance, usually the Traditional Birth Attendant (TBA) (MOH/UNFPA, 2004). One of the indicators of progress in reducing maternal mortality is the increasing proportion of births attended by skilled health care workers. Studies have shown that regions with high maternal deaths have low number of births attended to by skilled health care workers (WHO, 2005). In Nyandarua South district 2007, 5,404 mothers registered for ANC at various health facilities in the study district, but only 2559 (47%) of these were recorded to have delivered in health facilities and 4485 (83%) mothers brought their children for immunization. However, the central level registry (at the District headquarters) indicated a total of 6052 deliveries indicating that majority of the mothers attended ANC, chose to deliver at home, but brought their children for immunization (NSDSP, 2008-2010). Maternal health services in Nyandarua South district are not limited yet women still opt to



deliver at home. It is important to understand the effects of various demographic, economic factors, and perceptions of the mothers have on the choice of delivery place in Nyandarua South District hence this study. The study also sought to find out the reasons behind the large discrepancy between high antenatal coverage and low levels of skilled attendance at birth. This also leads to identification of factors other than the infrastructure that influence choice of place of delivery and birth attendant. It is expected that the results obtained will be used to influence changes in health care and health education through advising the MOH policy makers on what changes need to be made in order to increase the number of women seeking skilled attendants' services during delivery. This will ensure that women are not prevented from accessing skilled attendants at birth by socio-economic/cultural barriers or other deterrents.

## **1.4 Objectives**

### **1.4.1 General Objective**

To establish delivery practices and associated factors among mothers attending MCH clinics in selected health facilities in Nyandarua South district, Kenya.

### **1.4.2 Specific Objectives**

1. To determine the proportion of births attended by skilled health personnel among mothers attending MCH clinics at the selected health facilities in the study area.
2. To assess perception of mothers on birth attendants (skilled/unskilled) and place of delivery among the mothers attending MCH clinics at the selected health facilities in the study area.
3. To determine factors associated with delivery practices among mothers attending MCH clinics at the selected health facilities in the study area.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Causes of Maternal Mortality

Causes of maternal mortality may be direct or indirect. Local variations are however important considerations before making any conclusions. In some populations, unsafe abortion is a huge risk while indirect causes such as HIV/AIDS is the major cause of death where prevalence is high (Ronsman and Graham, 2006). Most maternal deaths occur during labor, delivery and the immediate postpartum period. Obstetric hemorrhage is the main direct cause accounting for 25% of maternal deaths, infections (15%), unsafe abortion (13%), eclampsia (12%), and obstructed labor (8%) (Ronsman and Graham, 2006)

A study carried out in Tanzania attributed the most common cause of death in women of reproductive age (15-49 years) to HIV/AIDS, with or without tuberculosis (Mswia *et al.*, 2003). A more recent study carried out in Tanzania showed an annual rise in maternal mortality ratios from 447 to over 560 maternal deaths per 100,000 live births between 1990 and 2005. The top three direct obstetric causes of maternal deaths include eclampsia, 108 (23.5%), postpartum hemorrhage, 107 (23.3%) and anemia in pregnancy, 52 (11.3%) (Kazaura *et al.*, 2006).

In Kenya, hemorrhage, sepsis, complications of unsafe/induced abortion, eclampsia and obstructed labor are the common direct causes of maternal deaths while inadequate and poor quality of ante natal care services (ANC) and postnatal care (PNC) services in many parts of the country are the indirect causes of maternal mortality (HMIS 2003 - 2004). The majority of maternal deaths in Kenya are due to obstetric complications that could have been prevented with adequate medical care (MOH, 2008). According to a study carried out in Western Kenya, Puerperal sepsis was the leading direct cause of maternal mortality (28%) while HIV/AIDS/ARC was the leading indirect cause of maternal mortality (40%) (Ofware *et al.*, 2005).

## **2.2 Safe Motherhood Initiative**

Safe motherhood means ensuring that all women receive the care they need to be safe and healthy throughout pregnancy and childbirth. The Alma Ata Conference on Primary Health Care (1978) sparked off great enthusiasm and belief in the possibility to radically reverse global inequities in health. The first studies on levels of maternal mortality in developing countries appeared in 1985 when the World Health Organization (WHO) announced that half a million women were dying each year from obstetric complications (Starrs, 2006). This is where it became clear that when looking at issues of maternal child health, maternal health was neglected and this triggered off a new commitment: the Safe Motherhood Initiative which was launched in Nairobi (WHO and UNFPA, 1987). The launch of the Safe Motherhood Initiative (SMI) was seen as a major milestone to reduce the burden of

maternal mortality throughout the world, particularly in developing countries. The Safe Motherhood Initiative issued a call to action to reduce maternal mortality and morbidity by one half by the year 2000. It also led to the formation of the Inter-Agency Group (IAG) for Safe Motherhood. The following is a list of key events from the origin of the initiative to the most current event:

1978 - Alma Ata: Primary Health Care

1987 - Nairobi: Safe Motherhood Initiative

1994 - Cairo: ICPD Reproductive Health and Rights

1997 - Colombo: Safe Motherhood Action Agenda

2000 - UN Millennium Summit: MDG-5

2005 - PMNCH: Partnership of Maternal, Newborn and Child Health

2007 - London: Safe Motherhood at Twenty.

All events that make pregnancy unsafe, irrespective of the gestation or outcome, are part of safe motherhood. Safe Motherhood Inter-Agency Group have outlined clear strategies and specified interventions for the reduction of maternal morbidity and mortality, often referred to as the Pillars of Safe Motherhood. They include: safe delivery, antenatal care, postnatal care and family planning (WHO, 2005). Twenty two years after the launch of Safe Motherhood initiative, unsafe motherhood is still a major challenge in developing countries.

Many countries have been able to improve the health and well-being of mothers and newborns over the last 20 years. However, countries with the highest burdens of mortality and illness have made the least progress, and inequalities between countries are increasing. In many places, inequalities within countries are increasing too, between those who live in better conditions and have access to care, and those who for a variety of reasons are excluded (Wiebenga, 2007).

### **2.3 Skilled Attendance at Birth**

Safe delivery ensures that all deliveries are attended by persons with the right knowledge, skills and equipment and also provide post-partum care to mother and baby (Kabir, 2007). Majority of the maternal deaths that occur are avoidable or preventable. Being prepared to address complications is the key to saving the lives of mothers and newborns. This is why skilled attendance of mothers during delivery is crucial (UNFPA, 2004). These deaths can be prevented if deliveries are overseen by skilled attendants (SMN, 2002). However, globally, one third of births take place at home without the assistance of a skilled attendant (WHO, 2008). In Africa, less than 50% of births are attended by a skilled health worker (WHO, 2006a) despite an increase from 43% to 57% between 1990 and 2005 in all developing regions (MDG, 2007). A measure of the increase in proportion of deliveries assisted by skilled attendants is one of the indicators of progress towards achievement of Millennium Development Goal 5, which aims at improving maternal health (MDG, 2007). The global target aims at ensuring that at least 90% of births worldwide be attended by

skilled health personnel by 2015 (UNFPA, 1999).

During pregnancy, skilled attendants monitor the progress of the pregnancy, detect complications, provide preventive measures, develop birth and emergency plans with the woman and her family and advise women on health, lifestyle and nutrition in pregnancy. During childbirth, skilled attendants monitor the progress of labor and are vigilant for complications. Skilled attendants are able to manage abnormalities such as breech delivery and, in a team of various professionals with obstetric, neonatal and anesthesia skills, complications such as severe eclampsia or obstructed labor are dealt with. In the postnatal period, the range of care varies from helping mothers and babies in breastfeeding to managing complications such as severe postpartum bleeding, infection or depression (WHO, 2008).

Skilled attendants provide counseling on postnatal contraception to the mothers as well as preventing mother-to-child transmission of HIV. Skilled attendance starts in pregnancy with HIV testing, providing antiretroviral therapy, counseling on infant feeding and advising on safer sex practices including the use of condoms and continues in childbirth by choosing appropriate obstetric practices and supporting the mother in her choice of feeding the baby and family planning counseling (WHO, 2008)

Historical and observational evidence indicates that there exists an inverse relationship

between maternal mortality and the proportion of deliveries attended by health professionals. The regions with lowest levels of skilled birth attendance; Sub-Saharan Africa (45%) and South Asia (41%) are also the regions with the highest incidence of maternal mortality with MMRs of 900/100,000 and 490/100,000 respectively (WHO, 2006). Industrialized countries halved their maternal mortality ratios in the early 20<sup>th</sup> century by providing professional midwifery care at childbirth (WHO, 2008). The use of skilled attendants at delivery in developing countries increased between 1990 and 2000 from 42 to 52 per cent, suggesting a potential decrease in maternal mortality rates from 590/100,000 in 1998 to 450/100,000 in 2005 (WHO/UNICEF/UNFPA/WB, 2005).

Findings show the greatest improvement in proportion of deliveries attended by skilled health care workers in South East Asia and Northern Africa where the coverage in births attended to by skilled health care workers increased from 55% in 1995 to 81% in the period 2000-2007. The slowest change has been noted in sub Saharan Africa, where the proportion of deliveries attended by skilled attendants rose from 40 per cent in 1990 to 43 per cent in 2000 showing a progress rate of 0.1% which is below the 5.1% required to achieve MDG 5 (WHO, 2007). Demographic and health survey data from 20 sub-Saharan Africa countries collected during the 1990s shows that, on average, only about one-third of mothers in rural areas deliver in a health facility. Findings from a study carried out in Tanzania showed that although the vast majority of women attend ANC services, more than half of them give birth at home with the hospital delivery being perceived by the



women to be associated with severe delivery complications (Mwifadhi *et al.*, 2009).

In Kenya, almost 60 percent of births occur at home. Of all pregnant women, 42 percent are assisted during childbirth by a doctor, nurse, or midwife. Another 28 percent have a traditional birth attendant and 8 percent deliver alone (KDHS, 2003). Although postnatal care is an important precaution against post-delivery complications, majority (81 percent) of women who delivered at home do not have a postnatal checkup, and only 10 percent have a checkup within 2 days of delivery, as recommended (KDHS, 2003).

Access to safe delivery is also different between the rural and urban residents where only 40% of mothers in the rural areas access safe delivery as compared to 75% of mothers in urban areas (MNPI, 2005). However, comprehensive studies of factors associated with delivery care in sub-Saharan Africa settings are lacking (Gichangi *et al.*, 2004). According to Kenya Demographic Health Survey (2003), the percentage of medically assisted deliveries fell consistently instead of increasing from 50 % in 1993 to 42 % of births in 2003. However the 2008 Kenya Demographic Health Survey indicated an increase of skilled attendance among mothers to 44% (KDHS, 2008).

#### **2.4 Role of Traditional Birth Attendants in Child Birth**

Traditionally in Africa, women at child birth were attended by Traditional Birth Attendants (TBAs) who used herbal remedies in assisting the delivery process. The practice is still

ongoing in some regions especially in the developing countries. The role of TBAs varies widely from country to country depending on the nature and roles of other health care providers. The Malawian government, in recognition of acute shortage of staff in the midwifery profession introduced the TBA training programme (Bisika, 2008).

The TBA is usually an older woman who has delivered many children and who nearly always is past menopause. In a survey of 263 registered TBAs in Ghana, 48% were men who assisted in delivering more babies per year than did their female counterparts. Some TBAs are also traditional healers known as herbalists many of whom are found in Bangladesh, Ghana and Kenya (Bannerman *et al.*, 1983). Most TBAs go to the woman's house to deliver although some have arranged a delivery area in their own house or compound. Apart from attending to deliveries, they are also involved in helping with household chores. In Meru district in Kenya, it was found that the TBAs often stayed a minimum of four days with the newly delivered mother assisting her to wash herself daily, supervising the preparation of food and ensuring an adequate supply of water and cooking fuel, making TBAs the preferred birth attendants over modern professional mid wives (Kimani, 1995).

Most of the TBAs are found in poor rural areas, distant from health facilities. Most TBAs have no formal training and their continued practice in the society in today's world is one of the factors contributing to high maternal mortality (UNFPA, 1996). Though TBAs attend to the highest proportion of deliveries in Kenya, recent estimates, however, suggest

that only about 2 in 10 Kenyan TBAs have undergone any type of formal training in attending to deliveries (Tawiah , 2007). Traditional birth attendants (TBAs) conduct over 70% of the total deliveries in some districts in Kenya (MOH/UNFPA, 2004) for instance in Mwingi and Kwale. A study carried out in Machakos revealed that over 75% of all deliveries were conducted by TBAs (Mate, 1987). There are still many countries where a large proportion of the population does not have access to health services, relying on TBAs (and traditional healers) to meet their health care needs. UNFPA has supported Traditional Birth Attendants (TBAs) programmes since 1970 to improve maternal evaluation and child health and as part of the Safe Motherhood Initiative since it started in 1987 through training them on how to conduct clean/safe deliveries (UNFPA, 1996). However, there is no clear policy on whether TBAs should continue attending to deliveries or not (MOH/UNFPA, 2004). Though TBAs are invaluable in the absence of professional obstetric services, WHO statement on TBAs cautions that even the trained TBA is not a substitute for a professional midwife (WHO, 2007)

## **2.5 Perceptions on Pregnancy and Child Birth among Mothers**

Pregnancy and motherhood is in many cultures perceived to be a natural phenomenon, not requiring intervention unless something is clearly wrong (Caldwell, 2002). Different perceptions and interpretations of danger signs during pregnancy amongst health personnel and the local community and traditional views on pregnancy and motherhood, are important cultural factors. These factors influence health care seeking behavior of mothers

during pregnancy and delivery. In Benin, women perceive older multigravidas as weak; they might bleed and even die. The very young and primigravida are also seen as at risk of dying, and so is the baby. Becoming ill in other ways might be the consequence of such deliveries (Seljeskog *et al.*, 2006). A study carried out in Kwale district, Kenya revealed that women perceived health facilities as a harsh setting for childbirth (Cotter *et al.*, 2006). Allowing a family member or a friend of the woman to accompany her during labour might be a possible intervention, to overcome the cultural need of the family to observe the delivery, as well as reducing the barrier of unfamiliar environment that may cause timidity and anxiety (Seljeskog *et al.*, 2006).

## **2.6 Improving Maternal Health**

The level of maternal mortality may be considered one of the proxy indicators for health performance in terms of access and quality of health service (Kazaura *et al.*, 2006). Because most maternal deaths occur during delivery and during the postpartum period, emergency obstetric care, skilled birth attendants, postpartum care, and transportation to medical facilities if complications arise are all necessary components of strategies to reduce maternal mortality (MNPI, 2005).

Ensuring safe pregnancy and delivery requires recognizing and supporting the rights of women and girls to lead healthy lives in which they have control over the resources and decisions that impact on their health and safety. Improving maternal health requires raising

awareness of complications associated with pregnancy and childbirth, providing access to high quality health services (antenatal, delivery, postpartum, family planning), and eliminating harmful practices (MNPI, 2005).

Gender equality and women's empowerment are integral to the reduction of maternal mortality and ensuring healthy mothers. Evidence from demographic health surveys indicate that much of women's decision making power is exerted at community level (Desai and Kiersten, 2005). When women are empowered to participate in their communities, they can challenge the attitude and practices that entrench gender discrimination, pool resources and collectively devise and sustain initiatives to improve maternal and newborn health. Improving the economic status of women can be vital to enhancing women's participation in decision making, with attendant implications for their own health (Smith *et al.*, 2003).

Adolescent health is crucial in improving maternal health as adolescents are at a particular high risk of death during delivery. Pregnancy is the leading cause of death for young women aged 15 to 19 worldwide with complications of childbirth and unsafe abortion being the major factors (UNFPA, 2004). About 16 million women 15-19 years give birth each year, which accounts for about 11% of all births worldwide (Mahmoud *et al.*, 2006). More than 50% of these births occur in sub-Saharan Africa. For both physiological and social reasons, births to adolescent mothers are more likely to be unintended and are more

likely to end in induced abortion, one cause of maternal morbidity and mortality. Research has shown that preventing unwanted pregnancy and eliminating unsafe abortion could avoid more than 25% of maternal deaths (Ronsman and Graham, 2006). Many health problems are particularly associated with negative outcomes of pregnancy during adolescence. These include anaemia, malaria, HIV and other sexually transmitted infections, postpartum haemorrhage and mental disorders, such as depression. Up to 65% of women with obstetric fistula develop this as adolescents, with dire consequences for their lives, physically and socially (Wamwana *et al.*, 2006). Families and communities need to support adolescent mothers as they often lack knowledge, education, experience, income and power relative to older mothers. In some cultures, adolescent mothers may also have to bear the effects of many judgmental attitudes. Health systems need to be able to respond to the special sexual and reproductive health needs of adolescents (WHO, 2008).

Maternal mortality has been shown to be high where women's social status is low where unintended and unwanted pregnancies contribute directly to maternal mortality (Fillipi *et al.*, 2006). As an effort to reduce maternal mortality, some significant changes can be observed in the international scene such as; growing consensus on effective technical interventions, growing political awareness, gender awareness and commitment to MDGs 3-6, collaborations between international agencies including UN, WHO, INGOs and more concerted action as well as new partnerships like the MDGs, Partnership for Maternal, Newborn and Child health. To resolve dichotomies in policy and power of funding

channels, there is need for strong health systems as maternal mortality can only be reduced through coherent health systems and human resource development (Freedman *et al.*, 2005).

The Skilled Care Initiative started in 2000 as a five-year project in Burkina Faso, Kenya and Tanzania with the support of Family Care International, focused on a set of health systems interventions to improve maternal health care, combined with intensive behavior change and build community support for skilled care. Efforts were especially targeted at household decision-makers including women, husbands, female elders and community leaders. Improvements on availability and quality of maternal care were noted but data also revealed challenges facing the health system (FCI, 2007).

To improve maternal health, health system interventions should be aimed at infrastructure strengthening, improving provider skills and strengthening supervision and health service management while community interventions should be aimed at raising awareness of the risks associated with pregnancy and childbirth, strengthening recognition and response to obstetric complications, promoting birth preparedness and planning for delivery and also promoting the use of skilled care throughout pregnancy, childbirth and the postpartum period (FCI, 2007).

Maternal Death Review (MDR) has been established by UNICEF as an effective way of improving quality of care and accountability of the health care system, based on both

historical and contemporary evidence. In the case of Kenya, the health sector aims at putting in place the second National Health Sector Strategic Plan and MDR processes, as well as the strengthening of community linkages (UNICEF, 2006). In Ethiopia, enhancing the establishment of more emergency obstetric care centers within reasonable access, providing Information, Education and Communication (IEC) on maternity services utilization and harmful traditional practices and improving the status of women in the community are recommended (Nigussie *et al.*, 2004)



## **CHAPTER THREE**

### **3.0 MATERIALS AND METHODS**

#### **3.1 Study Area**

The study was carried out in Nyandarua South district, Kenya. The district is amongst districts with unsafe motherhood as a key issue of concern (NSDSP 2008-2010), and is one of the eleven districts in Central Province (Appendix I). The district was carved out of the larger Nyandarua District. It borders Nyandarua North District to the north, Nyeri and Murang'a Districts to the east and Kiambu East district to the south. To the west, it borders Naivasha District of the Rift Valley Province. The district has an area of 1,367.2 square kilometers and is divided into 3 administrative divisions namely; Kipipiri, North Kinangop and South Kinangop. The district has 10 locations and 34 sub-locations.

Based on the National Population Census, the district has a total population of 230,622 with a population density of 227 persons per square kilometer and an annual growth rate of 3.3 %. There are 105 females for every 100 males. The crude birth rate (CBR) is 39.2% and a total fertility rate (TFR) of 6.6. 45.5% of the population is below 15 years of age while the youth (15-30) are 30% of the total population. Over 65% of the population is below 30 years while 3% of the total population is above 65 years. Most of the people are farmers (crop & dairy) with agriculture contributing to 75% of household income. 56% of the population lives in absolute poverty (NSDSP, 2008-2010). Population of special health significance include: infant population which is 10,861, children under

five years is 48,357 and 11,655 women are in the reproductive age group (15-49 years); (NSDSP, 2008-2010). The study was carried out in Nyandarua South district hospital and Nyandarua South sub-district hospital located in North Kinangop and South Kinangop divisions respectively.

### **3.2 Study Design**

This was a descriptive cross-sectional study.

### **3.3 Study Population**

This comprised of mothers aged 15 to 49 years attending the MCH clinics at the selected health facilities.

#### **3.3.1 Inclusion Criteria**

Mothers aged 15 to 49 years

Mothers who have recently given birth while in the study area

Mothers who gave informed written consent to participate in the study

#### **3.3.2 Exclusion Criteria**

Mothers below 15 years and above 49 years

Mothers in their first pregnancy, those who delivered more than 3 years prior to the study or those that have not given birth while in the study area

Mothers who declined to give informed written consent to participate in the study

### 3.4 Sampling

Systematic random sampling of mothers attending the MCH clinics and who met the inclusion criteria was used where every third mother was recruited after randomly selecting the first respondent. In case the recruited client did not consent the next mother was included. Sampling was done on alternate visiting days until the desired number of respondents was interviewed. Focus group discussion participants were purposively sampled from a different but homogenous group of mothers besides those who responded to the questionnaires. The sampling units included Nyandarua South District hospital and Njabini Health Centre (the only Sub-district hospital in Nyandarua South District) which were purposively selected because they have maternity facilities and are easily accessible by the majority of the community.

### 3.5 Sample size determination

According to research studies carried out, 42% of the deliveries in Kenya are attended by skilled personnel (PRB, 2005; KDHS, 2003) and this was used as the p (proportion). The Fisher statistical formula was applied as follows (Fisher *et al.*, 1998):

$$n = \frac{Z^2_{\alpha/2} p (1-p)}{d^2}$$

Where;

n = Required sample size

Z = Confidence level at 95 % (standard value of 1.96)

p = 42% estimated proportion of births attended by skilled attendance in Kenya

d = Level of precision at 5% (standard value of 0.05).

$$n = \frac{1.96^2 (0.42) (1-0.42)}{0.05^2}$$
$$= 374$$

A 10 % increase in sample size was included to give room for attrition.

### **3.5 Data Collection Methods**

Primary data was obtained using a semi-structured questionnaire (Appendix III). The questionnaire was designed in English but was administered by the researcher and/or research assistants in the native tongue version. The questionnaire was pre-tested in one health facility outside the study area in order to establish its validity and reliability.

Additional qualitative data was obtained through Focus Group Discussions (FGDs) and In-depth interviews. From each of the health facilities, 10 mothers were randomly identified at the exit of the MCH clinic to participate in the FGDs. These participatory appraisal discussions aimed at obtaining more detailed information on perceptions, mother's experiences regarding maternity services as well as exploring ways in which delivery services can be improved (Appendix IV). Focus Group Discussions were held after the individual questionnaires had been administered. This was done on different mothers with similar characteristics as those of individual respondents. In-depth interviews were conducted among selected key informants who included; the district reproductive health nurse, health officers in charge in each of the two selected health facilities, two nursing

officers/midwives each from the respective health facilities. These personal interviews aimed at seeking information with regard to utilization of the delivery services offered at the health facilities by the mothers as well as recommendations on how to increase the proportion of births attended by skilled attendants (Appendix V).

### **3.7 Data Management and Analysis**

#### **3.7.1 Data Storage**

All study participants received a unique participant identification number that was recorded on the questionnaire. Collected data for the study was thoroughly checked and validated for accuracy and completeness. The data was stored in memory sticks, compact disks and a laptop for back up before and after analysis. Data on the questionnaire was kept under lock and key while electronically stored data was password protected.

#### **3.7.2 Data Management**

Data captured in questionnaires from the selected health facilities was collectively entered into a database, data cleaning and data analysis was performed using Statistical Package for Social Sciences (SPSS Vers. 12.0 inc., 444 N. Michigan Ave. Chicago Illinois). Information from the various data collection tools was collated using a method of triangulation in order to synthesize and interpret the results. Tape-recorded data was transcribed, translated into English and analyzed using themes (Thematic analysis). SPSS statistical package was used for analysis of the quantitative data. Descriptive statistics

including mean, frequency distributions cross tabulations and standard deviations were used. Bivariate analysis was done using the Pearson's chi-square test on hypothesized categorical variables and Independent T-test on hypothesized continuous variables. The categorical variables included; mothers' education level, place of delivery attendance, perception on birth attendants, knowledge, satisfaction and practice scores while T-test variables included; mother's mean age, mean number of deliveries in a life time and mean wealth score. This was to determine the associations between the factors and delivery practice. The various scores on various elements in bivariate analysis were determined as follows:

#### **Mothers' Satisfaction with Maternity Services**

The level of satisfaction with maternity services among mothers was scored using four elements namely: chance to state problems and ask questions, treatment with respect, trust for the health care workers and environment within the maternity facility. A total of 100 scores were distributed among the four elements.

#### **Mothers' Knowledge on Safe Delivery**

Whether the mother had received ANC education, her sources of information on safe delivery, prior information about the danger associated with home delivery and whether it was important to always deliver in a hospital were important elements used to determine mothers' level of knowledge on safe delivery. Each of the elements was scored and distributed among a total of 100 scores.

### **Mothers' Practices in Preparation for Delivery**

Mothers' practice in preparation for delivery was considered to be predicted by; discussion on reproductive health issues before delivery, prior planning on place of delivery and ANC attendance. The scores were distributed among 100 scores.

### **Wealth Score**

To determine the wealth index, scores were generated using main two items, namely; type of house the mother occupied and whether it was owned or rented as well as the number of sources of income. Scores from housing ranged between 3 and 10 while each source of income earned 1 point. The total score for the two main items named above was considered as the wealth score.

Multivariate analysis was done using binary logistic regression to control for confounders and effect modification. Variables with  $P < 0.05$  in the logistic regression were considered to have a significant association with the delivery practice. Backward conditional method was used to establish true predictors. The predictors of delivery practice were estimated by the calculation of odds ratios (OR) and 95% Confidence Intervals (CIs) and a  $P < 0.05$  was considered as significant

### **3.8 Ethical Considerations**

Approval to carry out the study was obtained from KEMRI Scientific/Steering and National Ethical Review Committees (Appendix VI). Prior to the study, sensitization meetings with the health provincial, district administration authorities in the area and in-

charge of target health facilities were held. The objectives of the study were explained and permission sought to carry out the study at the health facilities and in the area. Data collection emphasized on issues of confidentiality and privacy by restricted access to the information collected and coding of questionnaires. After voluntary and informed consent was explained, only those mothers, who met the study requirements, verbally consented and voluntarily signed the consent forms were enrolled into the study (Appendix II).

Each informant was informed about their right to decline or withdraw any time from participating in the study without feeling constrained. Respondents were informed that the information would not be made available to persons outside the study team. Respondents were further assured that no person-identifiers would be used for publication. Any mother who met the inclusion criteria and willing to participate in the study but aged below 18 years of age was asked to introduce her spouse (if over 18 years of age), parent or guardian to consent on her behalf. The interviews were conducted in identified private rooms to ensure that no information leaked. Consent for use of tape-recorder was sought prior to the focus group discussions and in-depth interviews. All information about the patients was handled with utmost confidentiality and only used for intended purposes.



## **CHAPTER 4**

### **4.0 RESULTS**

#### **4.1 Selected socio-demographic and economic characteristics of respondent mothers**

A total of 409 mothers; 205 from the district hospital and 204 from the sub-district hospital aged between 15 and 49 years who had given a recent birth were interviewed. Data from the two health facilities was analyzed collectively and no comparisons were made.

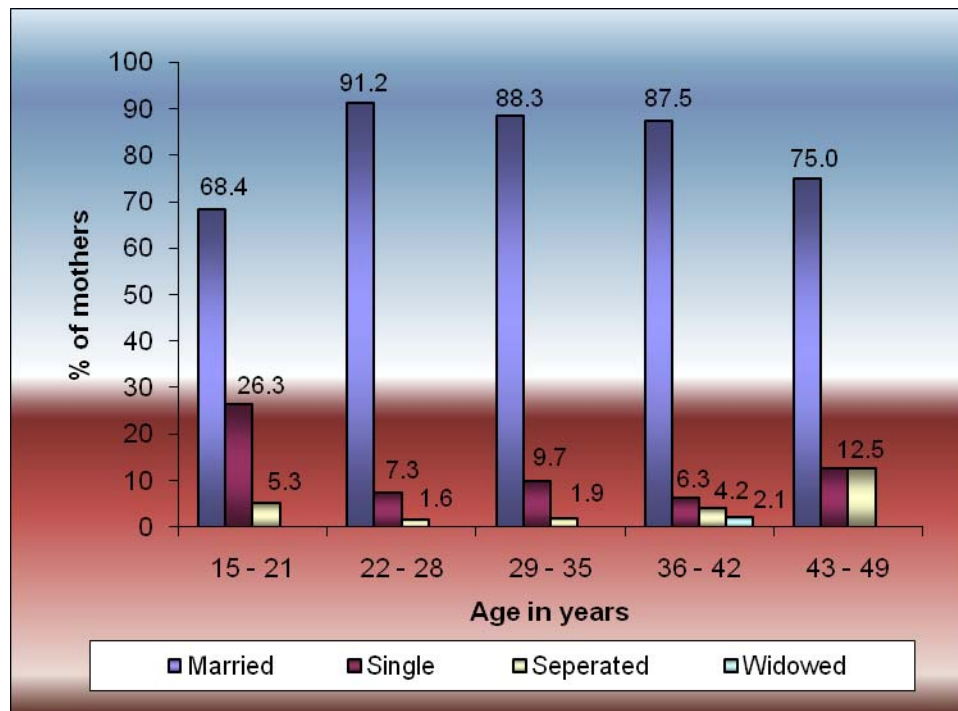
##### **4.1.1 Age of respondents**

Overall mean age of the mothers interviewed was  $28.1 \pm 6.4$  years ranging from 15 to 49 years. Majority of the mothers 47.2% (193) were aged 22 - 28 years. Over 25% of the mothers were aged 29-35 years with 13.9% of the mothers aging between 15 and 21 years. Slightly above 11% of the mothers were aged 36-42 years. The least number of mothers 2% (8) were aged 43-49 years.

##### **4.1.2 Marital Status of mothers**

Majority 86.6% (354) of the mothers were married, 10.5% (43) single, 2.7% (11) separated while 0.2% (1) were widowed. There was a significant relationship between age and marital status ( $\chi^2 = 32.54$ ,  $df = 12$ ,  $P=0.001$ ) where elder mothers were more likely to be either married or separated compared to their younger counterparts. The highest percentage of single mothers (26.3%) was among mothers aged 15 - 21 years while the highest

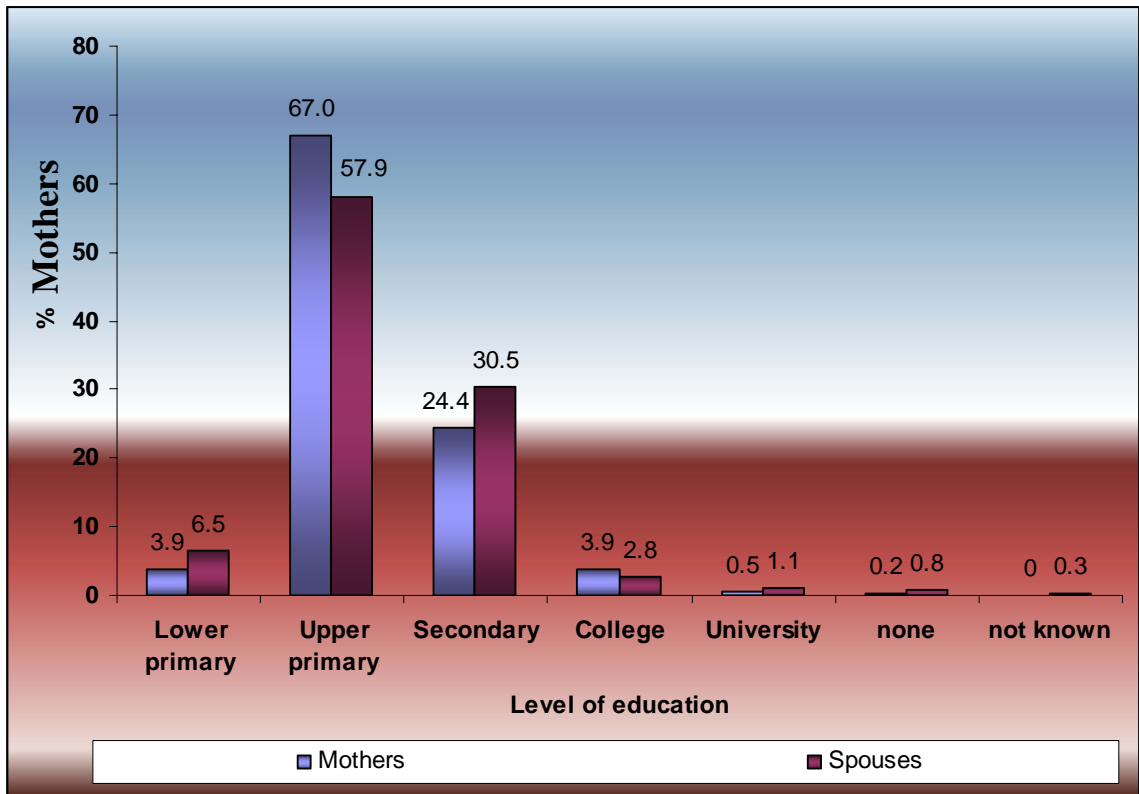
percentage of separated mothers (12.5%) was among mothers aged 43 - 49 years (Figure 4.1.1).



**Figure 4.1.1. Marital status of mothers by age category**

#### **4.1.3 Highest level of education attained among mothers and their spouses**

About 71% of the mothers had acquired primary level education with 4.4% (18) acquiring tertiary education while 65.5% (232) of the mother's spouses had primary level education. (Figure 4.1.2)



**Figure 4.1.2. Distribution of mothers and their spouses according to highest level of education attained**

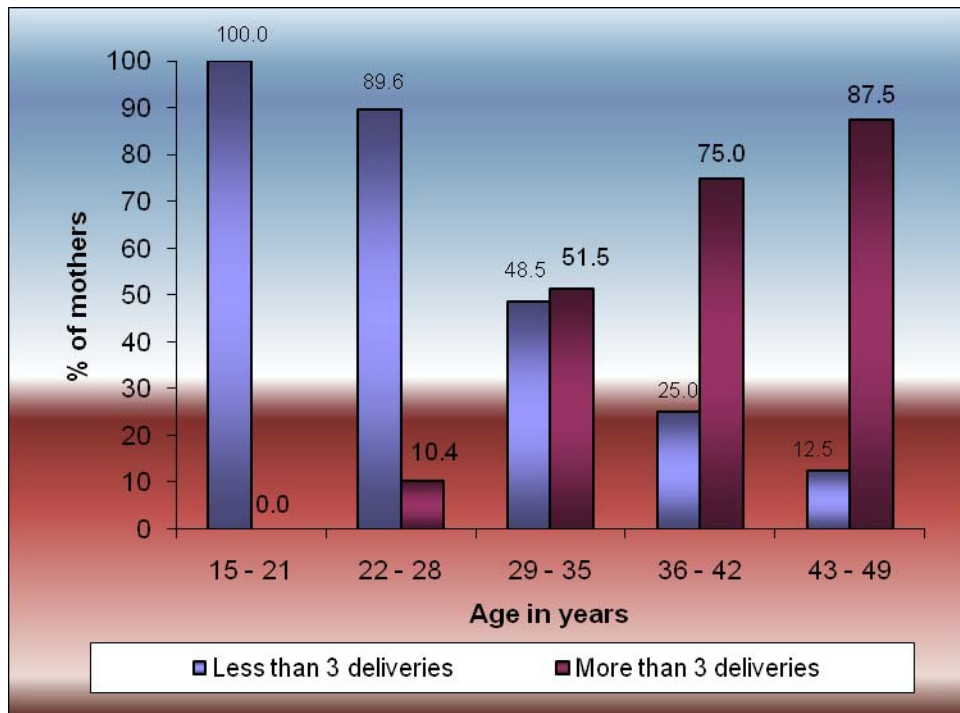
#### **4.1.4 Religious affiliation of mothers**

Majority 94.1% (385) of the mothers were Christians while 4.4% (18) of the mothers did not associate themselves with any religion. There was no relationship between religion and delivery practice ( $\chi^2 = 1.6$ ,  $df = 3$ ,  $P = 0.655$ ).

#### **4.1.5 Number of deliveries among mothers**

The mean number of live births was  $3 \pm 2$ . Mean number of still births was  $1 \pm 1$  ranging

from 1 to 3 with 6.4% (26) of the mothers having experienced at least 1 still birth in their lifetime. Average number of total deliveries was  $3 \pm 2$  children ranging from 1 to 10 (Table 4.1.1). Mothers were classified into two groups depending on the number of deliveries they had. The two groups were; mothers who reported less than 3 deliveries and those who reported more than 3 deliveries. All the mothers aged between 15-21 years (57) had less than 3 deliveries while 75% (53) of the mothers aged 36-42 years had more than 3 deliveries. Relationship between number of deliveries and age of the mother was significant ( $\chi^2 = 145.54$ ,  $df = 4$ ,  $P < 0.001$ ) with majority of young mothers giving birth to less or equal to 3 children (Figure 4.1.3).



**Figure 4.1.3. Distribution of number of live births by age of the mother**

**Table 4.1.1. Selected socio- demographic characteristics of the mothers**

<b>Characteristics</b>	<b>N=409</b>	<b>%</b>
Mean age [SD] years	28.1 [6.4]	
<b>Marital status:</b>		
Married	354	86.6
Single	43	10.5
Separated	11	2.7
Widow	1	0.2
<b>Level of education:</b>		
No formal education	1	0.2
lower primary(class 1-3)	16	3.9
upper primary (class 4-8)	274	67.0
Secondary	100	24.4
College	16	3.9
University	2	0.5
<b>Spouse level of education:</b>		
No formal education	3	0.8
Lower primary(class 1-3)	23	6.5
Upper primary (class 4-8)	205	57.9
Secondary	108	30.5
College	10	2.8
University	4	1.1
Not known	1	0.3
Not Applicable	55	13.4
<b>Religion:</b>		
Christian	385	94.1
Muslim	5	1.2
Traditional	1	0.2
None	18	4.4
<b>Number of children:</b>		
Mean number [SD], Alive	3[2]	
Mean number [SD], Dead	1[1]	
Mean number [SD], Total	3[2]	

#### **4.1.6 Type of house among the respondent mothers**

Majority of the mothers, 64.3% (263) of the respondents owned a house with the highest number 45.7% (187) among them owning semi permanent houses. Among the mothers who lived in rental houses, an average of  $1018 \pm 653$  shillings per month was paid by those who lived in permanent houses with an average rent 200 shillings per month being paid by those who rent temporary houses (Table 4.1.2).

#### **4.1.7 Occupation of the respondent mothers**

Majority of the mothers (64.1%) were housewives while 7.0% (29) were unemployed. About 41% (147) of the mothers' spouses were unemployed while 29.4% (104) of them were self employed business men.

Summary of the characteristics is as shown in Table 4.1.2

**Table 4.1.2. Socio economic characteristics of the mothers**

<b>Characteristics</b>	<b>N=409</b>	<b>%</b>
<b>House type:</b>		
1) Permanent; Own	7	1.7
Rented	45	11.0
Parent's/guardians	2	0.5
2) Semi permanent; Own	187	45.7
Rented	76	18.6
Parent's/guardians	18	4.4
3) Temporary; Own	69	16.9
Rented	1	0.2
Parent's/guardians	4	1.0
<b>House rent paid in Kenya Shillings per month:</b>		
Mean rent [SD], Permanent	1018[653]	
Mean rent [SD], Semi permanent	419[409]	
Mean rent, Temporary	200	
<b>Occupation of mothers:</b>		
Housewife	262	64.1
Business	53	13.0
Formal employment	18	4.4
Casual laborer	47	11.5
Unemployed	28	6.8
Student	1	0.2
<b>Occupation of spouse:</b>		
Business	104	29.4
Formal employment	21	5.9
Casual laborer	82	23.2
Unemployed	147	41.5
Not applicable	55	13.4
<b>Combined sources of income:</b>		
Farming	164	40.1
Business	44	10.8
Wages	36	8.8
Salary	9	2.2
Farming and Wages	63	15.4
Farming and Salary	11	2.7
Farming and business	64	15.6
Salary and business	5	1.2
Wages and business	2	0.5
Farming, salary, and business	6	1.5
Farming, wages, and business	3	0.7
Support from parents/guardian	2	0.5

#### 4.1.8 Sources of income among the mothers

Farming was depended upon by 40.1% (164) of the mothers as their only source of income while 11% (45) of the mothers depended entirely on either wages (casual laborers) or salary. Majority of the mothers 61.9% (253) had their sources of income from farming, business and either wages or salaried employment (Table 4.1.3).

**Table 4.1.3. Distribution of sources of income among the mothers**

Source of income	N	%
Support from parent/guardian	2	0.5
One source of income	253	61.9
Two sources of income	145	35.4
Three sources of income	9	2.2
<b>Total</b>	<b>409</b>	<b>100</b>

The wealth scores generated were classified into 3 groups as shown in Table 4.1.4. The mean wealth score was  $7.58 \pm 2.18$  ranging from 3 to 11. Majority of the mothers (80.7%) scored between 5 and 10 points, 17.1% (70) scored less than 5 points while 2.2% (9) scored more than 10 points. Mothers who scored less than 5 points were considered as the weakest economically while those who score more than 10 were considered to be economically empowered than the rest.



**Table 4.1.4. Distribution of the wealth score**

<b>Wealth index</b>	<b>N</b>	<b>%</b>
< 5	70	17.1
5 – 10	330	80.7
> 10	9	2.2
Total	409	100

## **4.2 Accessibility to Health Facilities Providing Maternity Services**

### **4.2.1 Distance to health facility**

The average distance between mothers' place of residence and the nearest health facility was  $6.7 \pm 5.8$  kilometers ranging from 1 to 30 kilometers. About half of the mothers lived less than 5 kilometers away from a maternity facility while 16.6% (68) of the mothers lived more than 10 kilometers away from the nearest health facility offering maternity services (Table 4.2.1).

### **4.2.2 Mode of transport to the nearest maternity facility**

Majority 64% (265) of the respondent mothers walked to the nearest maternity facility while the rest used public transport, bicycles or private transport (Table 4.2.1).

**Table 4.2.1. Accessibility factors to health facilities providing maternity services among the mothers**

<b>Characteristics</b>	<b>N=409</b>	<b>%</b>
<b>Distance to nearest maternity facility (Km):</b>		
Mean [SD]	6.7[5.8]	
Less than 5 Km	188	46
Between 5-10 Km	153	37.4
More than 10 Km	68	16.6
<b>Mode of transport:</b>		
Walking	265	64.8
Public transport	132	32.3
Cycling	10	2.4
Private transport	2	0.5

There was a significant relationship between distance to the nearest health facility and place of attendance ( $\chi^2 = 6.2$ ,  $df = 2$ ,  $P = 0.045$ ). Mothers who lived less than 5 kilometers to the nearest health facility were 1.85 times more likely to deliver in a health facility compared to those staying more than 10 kilometers. The likelihood of delivering in a health facility reduced with increase in distance (Table 4.2.2).

**Table 4.2.2. Distribution of place of attendance by distance to the nearest health facility**

Distance in Km to the nearest facility	Health facility		Home		odds ratio	95% C. I of odds ratio		P value
	N	%	N	%		Lower	Upper	
< 5	134	71.3	54	28.7	1.85	1	3.41	0.036
5 – 10	93	60.8	60	39.2	1.15	0.62	2.14	0.632
> 10	39	57.4	29	42.6	1.00			
<b>Total</b>	<b>266</b>	<b>65.0</b>	<b>143</b>	<b>35.0</b>				

### 4.3 Delivery Practices among Mothers

#### 4.3.1 Delivery Attendance

A total of 1170 deliveries were reported during the study period which included live and still births. Skilled attendants attended 48.2% (564) of these deliveries. Skilled attendants in this study included; doctor, nurse, midwife while unskilled attendants included; self (nil), neighbor, relative and/or Traditional Birth Attendant (TBA). Majority of the deliveries, 38.6% (452) attended by unskilled attendants were by neighbors and/or relatives. TBAs attended 1.5% (17). In 11.7% (137) of the deliveries, the mother delivered alone. Among the deliveries attended by skilled attendants, 2.7% (15) were at home while 97.3% (549) were attended in a health facility. Among 51.8% (606) of the deliveries that were attended by unskilled attendants 2.1% (13) took place in a health facility where the mother either delivered alone or was attended by her companions during delivery before the health care workers could attend to them (Table 4.3.1).

**Table 4.3.1. Distribution of deliveries by attendant**

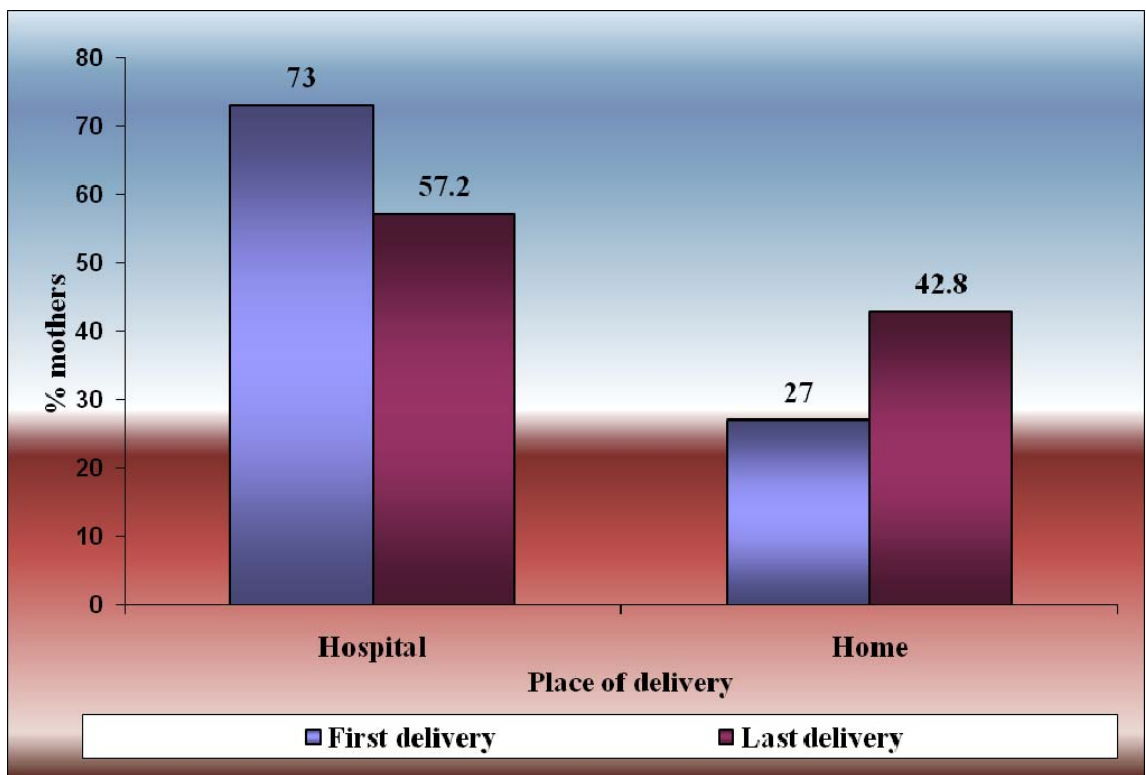
<b>Attendant</b>	<b>N</b>	<b>%</b>
Doctor, nurse, midwife	564	48.2
Neighbor and/or relative	452	38.6
Self	137	11.7
TBA	17	1.5
<b>Total</b>	<b>1170</b>	<b>100</b>

Analysis of safe and unsafe delivery practices was carried out using the last delivery report. Definition of safe or unsafe practice was based on the skills of the personnel that assisted in the delivery. Safe delivery was considered to be one that was attended by a skilled attendant (Table 4.3.2). Analysis of first and last delivery reports excluded mother who had delivered only once at the time of the study. Majority of the mothers 72.3% (225) were attended by skilled birth attendants during their first delivery compared to 54.3% (169) of the respondent mothers who were attended by unskilled birth attendants during their last delivery.

**Table 4.3.2. Distribution of delivery practice based on first and last delivery**

<b>Delivery practice</b>	<b>First delivery</b>		<b>Last delivery</b>	
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>
Unsafe (Unskilled attendant)	86	27.7	142	45.7
Safe (Skilled attendant)	225	72.3	169	54.3
<b>Total</b>	<b>311</b>	<b>100</b>	<b>311</b>	<b>100</b>

There was a reduction in hospital delivery attendance in the last delivery compared to the first among the respondents (Figure 4.3.1).



**Figure 4.3.1. Distribution of first and last deliveries by place of delivery**

There was a significant association between first and last places of delivery ( $p < 0.001$ ). A mother was 3.9 times more likely to deliver in the same place they delivered during their first delivery (Table 4.3.3).

**Table 4.3.3. Distribution of places of delivery by first and last delivery**

<b>First delivery</b>	<b>Last delivery</b>			<b>Odds ratio</b>	<b>95% C.I of odds ratio</b>		<b>P value</b>
	<b>Health facility n (%)</b>	<b>Home n (%)</b>	<b>Total n (%)</b>		<b>Lower</b>	<b>Upper</b>	
<b>Health facility</b>	150 (48.2)	77 (24.8)	227 (73.0)	3.9	2.3	6.6	<0.001
<b>Home</b>	28 (9.0)	56 (18.0)	84 (27.0)				
<b>Total</b>	178 (57.2)	133 (42.8)	311 (100.0)				

Among the 35% (143) of the mothers who delivered at home during their last delivery, majority (90.3%) were unsafe deliveries while among 65% (266) of the mothers who delivered in a health facility only 9.7% (15) were unsafe.

**Table 4.3.4. Distribution of delivery safety by place of delivery**

<b>Delivery practice based on last delivery</b>	<b>Home</b>		<b>Hospital</b>	
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>
Unsafe (Unskilled attendant)	139	90.3	15	9.7
Safe (Skilled attendant)	4	1.6	251	98.4
<b>Total</b>	<b>143</b>	<b>35.0</b>	<b>266</b>	<b>65.0</b>

Table 4.3.5 shows the distribution of reasons given by the mothers for choice of their last delivery place. Majority (23.3%) of the mothers chose to deliver in the place they were comfortable with while others 23.2% (64) went to the place where they had attended antenatal care or a health facility near their place of residence 18.3% (75). The reasons that

with home deliveries included: comfort, lack of maternity fee, and distance to the health facility, delivery on the way, and delivery without complications. There was a significant association between reasons for choice and place of delivery ( $\chi^2 = 249.6$ ,  $df = 14$ ,  $P < 0.001$ ).

**Table 4.3.5. Reasons for mothers' choice of delivery place**

Reasons for choice of delivery place	Home		Health facility		Total	
	N	%	N	%	n	%
	Comfort	69	16.9	26	6.4	95
Lack of maternity fee	8	2.0	2	0.5	10	2.5
Had complications	0	0.0	20	4.9	20	4.9
Attended ANC there	0	0.0	68	16.6	68	16.6
Equipped facility	0	0.0	36	8.8	36	8.8
Affordable	3	0.7	33	8.1	36	8.8
Hospital far away	20	4.9	0	0.0	20	4.9
Near place of residence	0	0.0	75	18.3	75	18.3
Delivered quickly(on the way)	27	6.6	0	0.0	27	6.6
Delivery without complications	3	0.7	0	0.0	3	0.7
Referral	0	0.0	14	3.4	14	3.4
Private facility	0	0.0	5	1.2	5	1.2
<b>Total</b>	143	35.0	266	65.0	409	100

These reasons were confirmed during qualitative data analysis from focus group discussions and in-depth interviews. One of the key informants reported; *“Some women, after delivering at home and not getting any complications have gotten used to it. To them,*

*delivery does not require any assistance and they therefore do not plan for any hospital deliveries. They are more comfortable at home”.*

Qualitative data analysis showed that service delivery during antenatal care attendance influenced the mothers’ decision for a health facility based delivery. One of the respondent mothers said; *“I visited antenatal clinic in my local health centre and was delayed for hours before being attended to so during delivery, I decided not to go there based on the experience before. I feared being left unattended during labor”*. Additional qualitative data revealed that majority of the mothers who delivered at home, did not go for a postnatal checkup as recommended after delivery. One of the respondents said, *“As long as the placenta is out and I feel fine, I only visit the health centre to take my baby for immunization”*.

Majority of the mothers 70.9% (290) paid for their last delivery by cash while 19.6% (80) did not pay for delivery (Table 4.3.6). There was a significant association between mode of payment and place of delivery ( $\chi^2 = 139.86$ ,  $df = 3$ ,  $P < 0.001$ ). Majority (66.0%) of the mothers who paid cash delivered at a health facility compared to 4.9% (20) that delivered at home.



**Table 4.3.6. Distribution of modes of payment by place of delivery among mothers**

Mode of payment	Home		Health Facility		Total	
	N	%	N	%	n	%
Cash	20	4.9	270	66.0	290	70.9
Insurance	0	0.0	39	9.5	39	9.5
No Charges	72	17.6	8	2.0	80	19.6
<b>Total</b>	<b>143</b>	<b>35.0</b>	<b>266</b>	<b>65.0</b>	<b>409</b>	<b>100</b>

#### **4.3.2 Delivery Preparedness among Mothers**

Majority (50.3%) of the mothers discussed reproductive health issues such as place of delivery with their spouses. More than half 55.3% (226) of the respondent mothers had not made earlier preparations on where delivery would take place. About 30% of the mothers had the place of delivery decided by their husbands, 9.8% (40) did not consider the need to plan prior to delivery while the rest had decisions made by either their mothers, companion during labor or mothers-in-law (Table 4.3.7).

**Table 4.3.7. Distribution of determinant of place of delivery and delivery preparedness among mothers**

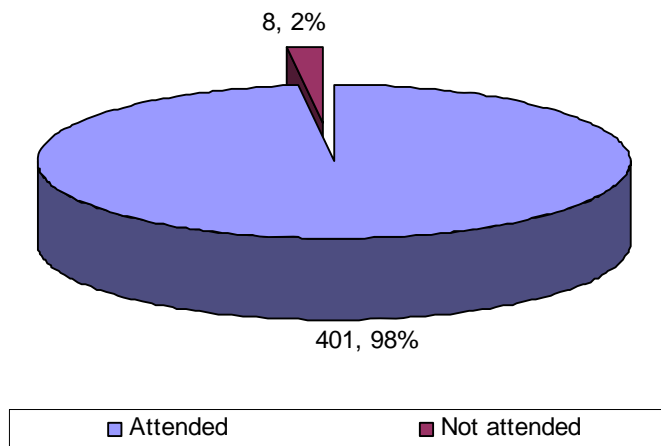
<b>Characteristics</b>	<b>N=409</b>	<b>%</b>
Reproductive health issues:		
Discussed	178	50.3
Not discussed	176	49.7
Birth plan:		
Present	183	44.7
Absent	226	55.3
Determinant of place of delivery:		
Self	183	44.7
Husband	132	32.3
Mother	22	5.4
Mother-in-law	14	3.4
No plans/decisions prior	40	9.8
Companion during labor	18	4.4

Qualitative data showed that mothers were willing to involve their spouses in reproductive health issues but the spouses seemed reluctant to get involved. One of the respondents said, *“I would be happy if my husband not only discussed childbirth issues but also accompanied me for delivery”*

#### **4.3.3 Utilization of Antenatal Services among Respondent Mothers**

Antenatal attendance was reported by 98.2% (401) of the respondent mothers with 88.5%

(355) of them attending at public MCH clinic and 11.5% (46) attending private or mission MCH clinics (Figure 4.3.2 and Table 4.3.8). Among the antenatal attendants 73.3% (294) were advised on safe delivery place, 25.9% (104) of them were not while the rest declined to respond.



**Figure 4.3.2. Antenatal clinic attendance among respondent mothers**

**Table 4.3.8. Place of Antenatal clinic attendance and Antenatal care advice on safe delivery**

<b>Antenatal Clinic attendance</b>	<b>N=401</b>	<b>%</b>
Place of attendance:		
Public MCH clinic	355	88.5
Private or mission MCH Clinic	46	11.5
ANC Advise on safe delivery:		
Advised	294	73.3
Not advised	104	25.9
No response	3	0.7

Qualitative data analysis confirmed the willingness of the mothers to attend antenatal care. Almost all the mothers (98%) who participated in the focus group discussions reported to have attended antenatal clinic at least once with the highest number attending in the mid to last trimester period. When probed on why the large disparity between high antenatal attendance and low skilled attendance during delivery, one of the key informants said, *“Nowadays, no child gets admission to nursery school without the MCH clinic card so mothers will make a visit to MCH clinic for antenatal services at least once just to secure that card though they know they would not want to deliver in the health facility. On the other hand, mothers perceive the MCH clinic card as a guarantee of hospital admission in case complications arise during labor and delivery”*.

#### **4.3.4 Sources of information on safe delivery among the mothers**

Analysis on the main sources of information on safe delivery services showed that 54.3%

(222) of the respondent mothers received information on safe delivery from barazas and/or seminars which were normally held in churches and health facilities, 20.0% (82) received from elderly women, 5.9 % (24) received it either from Radio / TV or from newspaper while 18.6% (76) had no source of information on safe delivery practices (Table 4.3.9).

**Table 4.3.9. Source(s) of information on safe delivery among mothers**

<b>Main source(s) of information</b>	<b>N</b>	<b>%</b>
Radio and/or TV	24	5.9
Newspaper	5	1.2
Barazas and/or Seminars	222	54.3
Elderly women	82	20.0
No source	76	18.6
<b>Total</b>	<b>409</b>	<b>100</b>

#### **4.4 Perception of Mothers on Birth Attendants and Place of Delivery**

Majority of the mothers 72.1% (295) acknowledged the importance of health facility based delivery. Assessment on whether the respondents had ever delivered in a health facility showed that 12.5% (51) of the respondents had never delivered in a health facility. Among those who had never delivered in a health facility, 27.5% (14) said that they were willing to deliver in a maternity facility in future while 72.5% (37) were not.

An analysis of reasons and willingness to deliver in a health facility (Table 4.4.1) showed that delays in hospital and/ or unpleasant procedures were the main reason for choice of

home delivery given by 82.3% (42) of the respondent mothers. All the respondent mothers (17.6%) who felt that delivering at home was risky compared to a health facility were willing to go for a health facility based delivery during their future deliveries. A relationship between reasons for choice of delivery place and willingness to deliver in a health facility was significant ( $\chi^2 = 30.3$ ,  $df=3$ ,  $P<0.001$ ).

**Table 4.4.1. Willingness and reasons for health facility based delivery among mothers**

Reason	Willing		Not willing		Total	
	N	%	N	%	N	%
Delays in hospital	4	7.8	25	49.0	29	56.9
Unpleasant procedures(episiotomy)	1	2.0	12	23.5	13	25.5
Risk at home	9	17.6	0	0.0	9	17.6
<b>Total</b>	<b>14</b>	<b>27.5</b>	<b>37</b>	<b>72.5</b>	<b>51</b>	<b>100</b>

The reasons for choice of place of delivery (Table 4.3.6) were based on last delivery. However, when asked why mothers preferred home delivery to health facility, the mothers gave various reasons (Table 4.4.2). Although the mothers knew the importance of hospital delivery, lack of transport to the health facility, dislike of the hospital procedures, comfort at home and lack of need to go for delivery in a maternity facility were cited to be the major reasons for home delivery. Other reasons included; lack of funds, fear of episiotomy, fear of being tested for HIV, unpreparedness or quick deliveries, religious affiliations, lack of problem during previous delivery, fear of mistreatment in hospital, saving costs,

occurrence of each of them was less than 10.0%. The same reasons came out during qualitative data analysis from focus group discussions with the mothers

**Table 4.4.2. Reasons for home delivery among the mothers**

<b>Reasons for home delivery</b>	<b>N</b>	<b>%</b>
Comfort at home	50	12.2
Ignorance	41	10.0
Lack of transport to the facility	70	17.1
Dislike of hospital procedures	56	13.7
Being uninformed or unexposed	48	11.7
Lack of funds	39	9.5
Fear of episiotomy	22	5.4
Fear of being tested for HIV	12	2.9
Unpreparedness or quick deliveries	36	9.8
Religious affiliation	6	1.4
No problem with previous delivery	14	3.4
Fear of mistreatment in hospital	13	3.2
Saving money	2	0.5
<b>Total</b>	<b>409</b>	<b>100</b>

Qualitative data analysis from focus group discussions showed that respondent mothers perceived health facilities as a harsh setting for delivery. One of the respondents explained; *“During the delivery of my first born, I went to the nearest government health facility. I suffered a lot especially because of the cold. I kept wondering why there cannot be a provision for more bedding in the maternity for an area as cold as this one. Worse still,*

*there was no provision of hot drinks for us. I vowed never to go for delivery there I prefer my home where it's warm and I have people to make me tea after delivery”.*

Further qualitative analysis on perceptions of respondent mothers on birth attendants showed that the mothers perceived medically trained health care workers as harsh and discriminative as they attend to them during labor and delivery. Some of the responses included: “...*I was left alone in labor and no one answered my call for help. I eventually delivered alone though in hospital*”; “*I don't think I will ever opt for a hospital delivery. They cut me so badly (episiotomy) during my first delivery which took me so long to recover....*” “*I observed that those doctors and nurses only treat their own kindly and the rest of us like trash*”. Key informants felt that mothers who chose to deliver at home were ignorant and uninformed as was also shown by quantitative analysis (Table 4.4.2).

Home delivery was considered to be dangerous by 70.2% (287) of the respondent mothers. Majority (50.5%) felt that excessive bleeding may occur, 18.1% (52) said that there was a danger of premature birth and obstructed labor while 2.4% (7) mentioned fainting as a danger.



**Table 4.4.3. Dangers associated with home delivery among mothers**

<b>Danger</b>	<b>N</b>	<b>%</b>
Excessive bleeding	145	50.5
Premature birth and obstructed labor	52	18.1
Risk of complication (death)	36	12.5
Retained placenta	23	8.0
No proper care or treatment	15	5.2
Risk of disease transmission	14	4.9
Fainting	7	2.4

About three-quarters of the respondents (77.8%) agreed that in the community, there were mothers who had religious beliefs that barred them from utilizing modern health care including labor and delivery services (Table 4.4.4). However, there was no relationship between place of delivery and religious beliefs ( $p=0.976$ ).

**Table 4.4.4. Existence of religious beliefs among mothers in the community**

<b>Religious beliefs</b>	<b>n</b>	<b>%</b>
Existed	318	77.8
Did not exist	91	22.2
<b>Total</b>	<b>409</b>	<b>100</b>

Majority of the mothers (72.9%) perceived medically trained birth attendants in health facilities as more skilled in attending to deliveries than birth attendants at home (TBAs, relatives and friends). They therefore described attendance by medically trained birth attendants as different from that of medically untrained persons. There was a significant

difference in distribution of those who accepted that there was similarity ( $P < 0.01$ ) with 44.8% (64) delivering at home compared to 17.7% (47) that delivered in a health facility (Table 4.4.5). One of the key informants during in-depth interview pointed out that; *“Mothers put more trust on traditional birth attendants (TBAs) or their relatives/neighbors to attend to them during delivery than the health care workers”*.

When mothers were asked to state who they felt were medically trained and experienced to attend to deliveries during Focus Group Discussions, they reported that even pharmacists and laboratory technicians were equally trained and experienced as the doctors and nurses to attend to deliveries. One of the mothers said, *“I believe my local pharmacist can attend to me the same way as the doctor would during delivery”*

**Table 4.4.5. Similarity in delivery attendance between birth attendants at home and at health facilities**

<b>Similarity</b>	<b>N</b>	<b>%</b>
Similar	111	27.1
Not similar	298	72.9
<b>Total</b>	<b>409</b>	<b>100</b>

#### **4.5 Mothers’ Satisfaction with Maternity Services**

Mothers’ satisfaction with maternity services at the health facilities they had attended for delivery was scored to give satisfaction scores (see methodology). A total of 100 scores

were distributed across four elements. Majority of the respondents (44.5%) scored 0 – 20 percent, 12.5% (52) 21 – 40 percent, 5.6% (23) 41 – 60 percent, 14.9% (61) 61 – 80 percent, and 22.2% (91) scored 81 – 100%.

Based on all variables, 22.1% (79) of the respondent mothers were satisfied with health facility delivery services while 77.9% (279) were not. The areas of dissatisfaction are shown in Table 4.5.1. Bed sharing and inadequate personnel were predominant areas of concern with over 56.9% (156) of the respondent mothers expressing dissatisfaction. Lack of food and water provision was reported by 22.6% (63) respondents. Scarcity of water was reported by 19.0% (53) mothers.

**Table 4.5.1. Areas of dissatisfaction with type of service at various health facilities providing maternity services among respondent mothers**

<b>Area of dissatisfaction</b>	<b>N</b>	<b>%</b>
Sharing of beds	89	31.9
Few doctors and nurses	67	24.0
No provision of food and drinks	63	22.6
Asked to buy all necessary materials of use (gloves, pads)	29	10.4
No water to shower	31	11.1
<b>Total</b>	<b>279</b>	<b>100</b>

Majority of the respondents 77.0% (315) expressed the need to improve on delivery services in various maternity facilities. There were multiple responses on this assessment.

Twelve percent (49) of the responses were given by mothers who saw the need to improve private maternity facilities, 93.6 % (383) concerning government facilities, while 7.8 % (32) were about TBA's. The main concern in private maternity facilities was commercialization of services to an extent of poor service delivery (75.5%). In government facilities, the leading concerns were; negative staff attitude (29.9%) and service delivery (27.1%). Areas of improvement are shown in Table 4.5.2.

**Table 4.5.2. Areas of improvement by types of health facility as proposed by the mothers**

<b>Areas to improve on delivery services in maternity facilities</b>	<b>n</b>	<b>%</b>
<b>Private maternity facilities</b>		
Limitations in space	7	14.3
Negative staff attitude	5	10.2
Commercialization of services	37	75.5
<b>TOTAL</b>	<b>49</b>	<b>100</b>
<b>Government maternity facilities</b>		
Number of staff	25	8.0
Negative staff attitude	93	29.9
Low hygienic standards	30	9.6
Provision of consumables (gloves, sanitary towels)	38	12.2
Sufficient bed capacity	65	20.9
Service delivery (efficiency)	78	27.1
Reduction of maternity fee	11	3.5
Diet	3	1.0
Availability of oxygen in maternity wing	40	12.9
<b>TOTAL</b>	<b>383</b>	<b>123.1</b>
<b>TBA's</b>		
Training	22	68.8
Sterilization of equipment	10	31.3
<b>TOTAL</b>	<b>32</b>	<b>100</b>

Qualitative data analysis on improvement needs complemented the findings of quantitative analysis. Respondent mothers felt that quality of service delivery in the health facilities may influence mothers' choice of delivery place. One of the respondents said; "*I accompanied a friend for delivery while I was expectant myself. I witnessed a woman deliver along the corridor and my friend was not treated better. When I looked amused I was chased away and dared to go there for delivery as my experience would be worse.....*". Respondent mothers agreed that the most important area for improvement in government health facilities was positive staff attitude. The mothers felt that with the mentioned changes made, more mothers would be encouraged to deliver in a health facility.

When asked on how to encourage safe delivery service utilization, key informants' suggested creating awareness amongst the mothers on the importance of delivering in a health facility. One of the respondents said, "*We need to educate the mothers and their partners so they may know there is a danger in delivering at home not just to their newborns but to themselves*". One of the key informants said they were planning on educating the mothers on the dangers of unskilled attendance during delivery as their first visit to the antenatal clinic.

## **4.6 Relationship of Selected Factors with the Delivery Practice among the Respondent Mothers**

### **4.6.1 Bivariate analysis; Chi-square test**

#### **4.6.1.1 Mothers' education level**

There was a significant association between mother's level of education and delivery practice ( $P < 0.001$ ). Comparing tertiary level with the other levels, there was a significant gradual increased likelihood (odds ratio) of practicing unsafe delivery with reduced level of education. The chance was 3 fold for secondary level, 14.3 folds for upper primary (class 4-8) and 55.3 for lower primary (class 1-3).

#### **4.6.1.2 Mothers' delivery place**

Home delivery was significantly associated with unsafe delivery ( $p < 0.001$ ). Majority 97.2% (139) of unsafe deliveries were reported by mothers who delivered at home during their last delivery. The probability of practicing unsafe delivery was 581.5 times more for mothers who delivered at home compared to delivering at a maternity facility.

#### **4.6.1.3 Mothers' perception on birth attendants**

When the respondent mothers were asked to compare birth attendants at home (untrained) and health facility based attendants (trained health care workers), 61.3% (68) of those who said they were similar used unsafe delivery during their last delivery compared to 28.9%

(43) of those who said they were different. A comparison of the two groups of women in terms of odds ratio revealed that lack of correct information predisposed the mothers to unsafe practice 3.9 times more, compared to those with correct information ( $P < 0.001$ ).

#### **4.6.1.4 Mothers' satisfaction with maternity services**

There was a significant association between mother's satisfaction and delivery practices ( $P < 0.001$ ). Comparing those with the highest score (81 – 100) to the other levels, there was a significant increased chance of practicing unsafe delivery with reduced score levels. The chance was 1.6 folds for mothers who scored 61 – 80 percent compared to 4.6 folds for those who scored 0 – 20 percent.

#### **4.6.1.5 Mothers' knowledge on safe delivery**

From Table 4.6.1, the level of knowledge was significantly related to the mode of delivery practice ( $P < 0.001$ ). Majority 94.4% (17) of the mothers who had no and/or incorrect information on safe delivery practiced unsafe delivery compared to 18.5% (24) who had information. There was a significant increased probability of practicing unsafe delivery with reduced score levels. Odds ratio showed that the probability of unsafe delivery practice was 2.1 folds for mothers who scored 61 – 80 percent compared to 75.1 for those who scored 0 – 20 percent.



#### **4.6.1.6 Mothers' practices in preparation for delivery**

Like satisfaction score, knowledge and practice scores were significantly ( $P < 0.001$ ) related to delivery practices. The odds of risk (unsafe delivery) increased with reduced level of percentage scores. For those who scored 51 – 75%, the odds ratio was 1.51, while for those who scored 0 - 20%, the odds ratio was 3.0

Table 4.6.1 shows the relationships of the selected categorical variables with delivery practice.

**Table 4.6.1. Relationships of selected factors with delivery practice among the mothers**

Variable/ category	Unsafe (None skilled attendance)		Safe (Skilled attendance)		Odds ratio	95.0% C.I. for odds ratio		P value
	N	%	N	%		Lower	Upper	
<b>Mothers level of education</b>								
Lower primary(class 1-3)	13	76.5	4	23.5	55.3	4.7	1539.9	<0.001
Upper primary (class 4-8)	125	45.6	149	54.4	14.3	2.0	291.5	0.001
Secondary	15	15.0	85	85.0	3.00	0.4	64.9	0.283
Tertiary	1	5.6	17	94.4	1			
<b>Place of delivery attendance</b>								
Home	139	97.2	4	2.8	581.5	174.9	2152.3	<0.001
Health facility	15	5.6	251	94.4	1			
<b>Perception on home versus health facility attendants</b>								
Similar	68	61.3	43	38.7	3.9	2.4	6.3	<0.001
Not similar	86	28.9	212	71.1	1			
<b>Mothers' satisfaction of mothers with maternity services ( % score)</b>								
0 – 20	97	53.3	85	46.7	4.6	2.5	8.8	<0.001
21 – 40	17	32.7	35	67.3	2.0	0.9	4.6	0.085
41 – 60	5	21.7	18	78.3	1.1	0.3	3.8	0.835
61 – 80	17	27.9	44	72.1	1.6	0.7	3.6	0.247
81 – 100	18	19.8	73	80.2	1			
<b>Mothers' knowledge on safe delivery ( % score)</b>								
0 – 20	17	94.4	1	5.6	75.1	9.7	1587.3	<0.001
21 – 40	38	77.6	11	22.4	15.3	6.4	37.2	<0.001
41 – 60	32	41.0	46	59.0	3.1	1.6	6.1	<0.001
61 – 80	43	32.1	91	67.9	2.1	1.1	3.9	0.012
81 – 100	24	18.5	106	81.5	1			
<b>Mothers' practices in preparation for delivery ( % score)</b>								
0 – 25	1	50.0	1	50.0	3.0	<0.01	114.2	0.433
26 – 50	68	50.4	67	49.6	3.0	1.6	5.7	<0.001
51 – 75	64	33.9	125	66.1	1.5	0.8	2.8	0.161
76 – 100	21	25.3	62	74.7	1			

#### 4.6.1.7 Bivariate analysis; Independent T- test

Independent T- test was used to compare mean estimates for the variables (continuous) between mothers who used unsafe delivery practice and those that used safe delivery practice. Table 4.6.1.2 shows that mean age differences between unsafe and safe delivery practice arms was significant ( $p=0.001$ ). The mothers' mean age among those who practiced unsafe delivery was 29.5 years while those who practiced safe delivery had a mean age of 27.3 years. This showed that younger mothers were more likely to utilize skilled attendants during delivery than their elder counterparts ( $p=0.001$ ). There was a significant difference ( $p<0.001$ ) between the mean number of deliveries in a life time among the mothers who had unsafe delivery and those who practiced safe delivery. Mothers who practiced unsafe delivery had the mean number of total deliveries as 3.8 compared to those who practiced safe delivery 2.3. However, there was no significant difference between mean wealth score (Table 4.6.2) among mothers with safe and unsafe delivery practices ( $P=0.329$ ). Wealth score for mothers who practiced unsafe delivery was 7.4 compared to 7.7 among those who practiced safe delivery.

**Table 4.6.2. Mean estimates of mothers' age, number of deliveries and wealth score mothers by delivery practice**

<b>Variable</b>	<b>Unsafe (Unskilled attendance)</b>	<b>Safe (Skilled attendance)</b>	<b>P value</b>
	<b>Mean <math>\pm</math> SD</b>	<b>Mean <math>\pm</math> SD</b>	
Mother's age	29.5 $\pm$ 6.7	27.3 $\pm$ 6.1	<b>0.001</b>
Total number of deliveries in a life time	3.8 $\pm$ 2.0	2.3 $\pm$ 1.4	<b>&lt;0.001</b>
Wealth score	7.4 $\pm$ 2.1	7.7 $\pm$ 2.2	0.329

#### **4.6.2 Multivariate analysis**

Binary logistic regression was performed on multiple factors to establish true predictors of delivery practice using eight predictive factors which significantly associated (independently) with delivery practice at bivariate analysis. These factors (independent variables) included: age of the mother, total number of deliveries in a life time, mothers level of education, place of delivery, perception on home versus hospital attendants, satisfaction, knowledge and practice scores. The dependent variable was delivery practice (0= Unsafe (Unskilled attendance), 1= Safe (Skilled attendance)).

Table 4.6.3 shows beta coefficient ( $\beta$ ), odds ratio and P value for each of the factors significantly associated with delivery practices. Increase in total number of deliveries in a life time was associated with increased odds of unsafe delivery practice as indicated by the odds ratio (1.5). A mother was 483.6 times more likely to use unsafe delivery practice if they delivered at home compared to a health facility. The odds of unsafe delivery practice was 2.6 times more in those who felt that there was no difference in quality of delivery services between delivery attendance at home by unskilled birth attendants and health facility attendance by skilled birth attendants. There was however no significant association between delivery practices and age, education level of the mother, wealth score, satisfaction, knowledge and practice in the logistic regression.

**Table 4.6.3. Logistic regression predicting delivery practices from total number of deliveries in a lifetime, place of attendance and mother’s perception on skilled and unskilled attendants**

Variable / category	$\beta$	S.E. ( $\beta$ )	df	P value	Odds ratio	95.0% C.I. for odds ratio	
						Lower	Upper
Total number of deliveries in a life time	0.422	0.131	1	<b>0.001***</b>	1.5	1.2	2.0
Place of attendance*							
Home	6.181	0.592	1	<b>&lt;0.001***</b>	483.6	151.7	1542.5
Perception on unskilled versus skilled attendants**							
Similar	0.968	0.537	1	0.072	2.6	0.9	7.6

\*Reference category used was ‘**Health facility**’

\*\*Reference category used was ‘**Not similar**’

\*\*\*Significant at 0.05 level.

## **CHAPTER FIVE**

### **5.0 DISCUSSION**

A measure of the proportion of deliveries assisted by skilled attendants is one of the indicators of progress towards Millennium Development Goal 5, which aims at improving maternal health (MDG, 2007). Skilled attendants are important during pregnancy, child birth and the immediate postnatal period. The findings of this study aimed at establishing delivery practices and associated factors among respondent mothers in Nyandarua South district showed that utilization of safe delivery practice was still low. Among the deliveries attended by skilled attendants (48.2%), only a small proportion (2.7%) of this took place at home. This shows that majority of safe deliveries take place in health facilities hence the need to encourage women to deliver in health facilities where they can be attended by skilled attendants as well as get emergency attention in case of complications.

From the results, like in many developing countries less than 50% of births are attended by a skilled health worker (WHO, 2006b). There was however a notable increase in the proportion of births attended by skilled attendants based on last delivery (54.3%) compared to the overall rate (48.2%). This increase in skilled delivery attendance could be attributed to increased awareness of risks involved in home deliveries or improved infrastructure with regard to accessibility of maternity services. The increase shows progress towards achieving MDG 5 which aims at increasing the proportion of births attended by skilled attendants in that at least 90% of births worldwide be attended by skilled health personnel by 2015 (UNFPA, 1999). However, although most countries have reported notable

increase in the proportion of births attended by skilled attendants, the slowest change has been noted in sub Saharan Africa, where the proportion of deliveries attended by skilled attendants went up from 40 per cent in 1990 to 43 per cent in 2000 showing a progress rate of 0.1% which is far below the 5.1% required to achieve MDG 5 whereas countries like South East Asia and Northern Africa increased coverage in births attended to by skilled health care workers from 55% in 1995 to 81% in the period 2000-2007 (WHO, 2007).

In Kenya, utilization of health facilities for labour and delivery services has been on the decline. According to Kenya Demographic Health Survey 2003, the percentage of medically assisted deliveries has fallen consistently instead of increasing during the periods between the surveys, from 50 percent of births in 1993 survey to 42 percent of births in the 2003 (KDHS, 2003). The overall proportion of skilled attendance during delivery (48.2%) obtained in this study, was slightly above the national estimate of births attended by skilled attendants (42%) as reported by the Kenya demographic health survey but far below the estimates for Central province (68.8%); (KDHS, 2003). Other studies in Kenya have confirmed low skilled birth attendance of mothers during delivery with the situation warranting quick attention if MDG 5 targets have to be met (Mwaniki *et al.*, 2002; van Eijk *et al.*, 2006; Kamau, 1998). Majority of deliveries that are attended by unskilled attendants as was found in this study (focus group discussion) are likely to be carried out in unhygienic conditions putting both the mother and the newborn at risk of delivery-related complications leading to maternal and neonatal morbidity and mortality.

This observation has also been reported by the Kenyan Ministry of Health (MOH/UNFPA, 2004).

However, unlike other parts of the country such as Mwingi and Kwale Districts, where Traditional Birth Attendants (TBAs) attend to over 70% of the deliveries (MOH/UNFPA, 2004) only 1.5% of the deliveries in this study were attended by TBAs among the respondent mothers. This estimate was also quite low compared to the nationally observed rate of 28 % (KDHS, 2003) attendance. TBAs are popular among communities that highly guard their cultural beliefs associated with child birth. In this study, no cultural beliefs associated with pregnancy and child birth were identified and this could explain the low proportion of births they attended. Though in this study it was not established whether the TBAs were trained or not, TBAs form the backbone of maternity services in rural areas (Smith *et al.*, 2000). However, TBAs are also relied upon by large populations that have poor and/or no access to health facilities (Bisika, 2008). In other studies, mothers are found to place high value on TBA services as they not only attend to deliveries but also give personalized care such as helping with household chores (Cotter *et al.*, 2006; Kimani, 1995; Mtambwira, 1985). Though trained TBAs have been found to contribute to improving MCH as they offer the only means by which women in rural communities have access to a clean delivery, these TBAs have been noted to be overconfident and even experiment on cases requiring referral (Bisika, 2008). There is no clear policy in Kenya on whether TBAs should continue to attend to deliveries though UNFPA supports their



training on how to conduct clean and safe deliveries (UNFPA, 2006).

Unassisted delivery is particularly common among multigravidae, a high-risk group in obstetrics (KDHS, 2003) which makes it difficult to seek assistance in the event of life-threatening complications (van Eijk *et al.*, 2006). Increase in the number of deliveries (multigravidity) was significantly associated ( $P=0.001$ ) with increased number of unsafe deliveries which include the unassisted deliveries. From the findings of this study, it was surprising to find that a high proportion of the mothers gave birth without assistance (11.5%). This estimate was similar to the 18% observed in a study in Western Province (van Eijk *et al.*, 2006) but almost twice that observed in the most recent demographic health survey in Kenya (8%) and in a study in Mbeere District, Kenya (6.5%); (KDHS, 2003; Mwaniki *et al.*, 2002). The high number of mothers who had unassisted deliveries in Western province could be attributed to cultural factors whereas in this study, no cultural beliefs were associated with delivery practices. Women should be encouraged to seek assistance during delivery as lack of attendance makes it difficult to seek assistance in the event of complications.

In this study, there was a major disparity between antenatal care coverage and levels of safe delivery care utilization coverage where 401 (98%) mothers reported to have attended ANC care at least once during their last pregnancy compared to 169 (54.3%) who sought skilled attendants' services during delivery. Although the modal gestation age at first visit

was not investigated in this study, the results revealed a general motivation to attend antenatal clinic and that there exists an opportunity for the health care workers to encourage utilization of health facilities for labour and delivery services. In Zimbabwe, rural women are prepared to accept antenatal services in the formal health centers but choose to deliver under the care of TBAs at home (Mtambwira, 1985). Other studies in Kenya have also reported good antenatal clinic attendance though most of the visits are in the later stages of pregnancy. The studies also recommend that during antenatal care, the health care workers should take their time to inform the mothers of risks involved in home deliveries (Mutiso *et al.*, 2008; Karanja and Were, 1994). Antenatal care can be a potentially effective instrument to ensure more facility based deliveries (Mutiso *et al.*, 2008). However, based on the findings from a study carried out in rural Kenya and similar to this study, adequate ANC attendance during pregnancy did not significantly influence hospital delivery (Hodgkin, 1996).

In regard to postnatal care, FGDs in this study revealed that majority of the mothers did not have a check up within 2 days of delivery as recommended by the Kenyan ministry of health. The mothers felt that postnatal care was meant for immunization of their babies. From the qualitative analysis, it appeared that, there had been less attention paid to the role of postnatal care as far as maternal health was concerned yet a large proportion of maternal morbidity and mortality occur during the postnatal period. The findings of this study were consistent with Kenya demographic health survey where it was reported that majority

(81%) of women who delivered at home did not have a postnatal checkup, and only 10% have a checkup within 2 days of delivery, as recommended by the Kenyan Ministry of Health (KDHS, 2003).

In this study, there was a reduction in hospital delivery attendance since the last delivery (57.2%) compared to the first (73%). Consequently, there was an increase in the proportion of deliveries attended by unskilled attendants during the last delivery (45.7%) compared to the first (27%). Further analysis showed that there was a significant association ( $P < 0.001$ ) between the first and last places of delivery where a mother was found to be 3.9 times more likely to deliver her last baby in the same place she delivered during her first delivery. This shows that the first experience a mother had at the chosen place of delivery and with the chosen birth attendant was very important. In this study majority of the mothers (73%) utilized maternity services during their first delivery, this would offer the health care providers an opportunity to enhance a positive relationship between themselves and their clients which would in turn lead to a positive perception on health facility based deliveries as well as on medically trained delivery attendants.

Though majority (54.9%) of the mothers chose to deliver at home, 70.2% of them perceived home as a dangerous place for delivery. However, mothers were aware of potential risks and could identify one or more complications that could occur during home deliveries. Majority of the mothers 50.5% (145) felt that excessive bleeding may occur

which could be a cause of death. Other danger signs that were perceived to be associated with home deliveries were; premature birth/obstructed labor, retained placenta, fainting, with very few mothers (4.9%) recognizing risk of disease transmission as a danger. In the current era of HIV/AIDs, home deliveries attended by unskilled attendants most of whom do not use protective equipments puts the mother and her baby at risk of HIV transmission. Though information on how deliveries were attended to at home was not probed for in this study, qualitative information revealed that most of the attendants at home were unprepared and though the mothers had with them sterilized blades and strings, the attendants did not use gloves while attending to them.

Among the mothers (51) who had never delivered in a health facility, 17.6% (9) of them felt that it was risky to deliver at home and were willing to deliver in a health facility. Mothers (82.3%) who said that there were unpleasant procedures and delays in hospitals felt that the health facility was a harsh setting for delivery and expressed no interest in delivering in health facilities at all. In a study at the region at the Coastal region of Kenya also revealed that women perceived health facilities as a harsh setting for childbirth and they therefore chose to deliver their babies at the comfort of their home (Cotter *et al.*, 2006). There was a significant relationship ( $P < 0.001$ ) between reasons for choice of delivery place and future interests in hospital delivery among the mothers who had never delivered in health facilities. Majority of the mothers who disliked delays in hospital and unpleasant procedures chose to deliver at home while most of those who perceived home as a risky delivery place chose to have health facility based deliveries. The findings in this

study were consistent with those of a study in Bangladesh where different perceptions and interpretations of danger signs during pregnancy and delivery were found to be important factors that influenced mothers' health seeking behavior during delivery (Caldwell, 2002).

Among the reasons identified for preferred home deliveries included: lack of transport to the nearest maternity facility, dislike for hospital procedures such as episiotomy in which the mothers felt it was unnecessary, mothers felt more comfortable to deliver in their own houses than from the hospital maternities, lack of information on safe delivery practices. It was however interesting to note that most mothers acknowledged there were potential risks (dangers) associated with home delivery and could identify retained placenta, obstructed labor, excessive bleeding or even death as complications that could occur. These findings show that majority of the mothers did not deliver at home because they were unaware of the risks involved but because of their anticipation of the quality of maternity services they would receive.

Most maternal deaths can be averted if deliveries are overseen by skilled attendants (SMN, 2002) with the right knowledge and skills. From the findings of this study, mothers who perceived birth attendants at home (unskilled) as similar to birth attendants in health facilities (skilled) in the way they attend to deliveries were attended by unskilled birth attendants mainly relatives during delivery. An earlier study on reasons for continued TBA patronage in Kenya revealed that mothers perceived TBAs as equally skilled as the

medically trained health professionals (doctor, nurse, midwife) in attending to deliveries and thus their continued preference by mothers to attend to deliveries over the skilled attendants (Kamau, 1998). Cross tabulation results showed that there was significance between the perception of the mothers on birth attendants and their delivery practice ( $P < 0.001$ ) while regression analysis results showed that mothers who perceived quality of service between birth attendants at home and those in health facilities as the same were more likely (2.6 times) to be attended by unskilled attendants during delivery. The perception of mothers on birth attendants could be greatly influenced by the interpersonal relations. This has been confirmed by an earlier study where the interpersonal relations with the health personnel during labor and delivery were the major issue in determining the delivery place (Kimani, 1995). Attitude of health care providers and the quality of institutional deliveries can help explain the observed high rate of home deliveries (51.8%) despite adequate ANC attendance (98%) in this study. These findings are consistent with those of an earlier study in rural Kenya on household characteristics that influence mothers' choice of a delivery place (Hodgkin, 1996).

In Kenya, the utilization of maternal services differs from district to district and from community to community. This difference in utilization is strongly attributed to maternal characteristics and accessibility factors (Jane *et al.*, 1995). Accessibility to the health facility is one of the factors associated with mothers' delivery practices (van Eijk *et al.*, 2006; Cotter *et al.*, 2006; Jane *et al.*, 1995; Hodgkin, 1996; Muraya and Mati, 1985). From

the results of this study, there was a significant relationship between distance to the nearest health facility and place of delivery attendance where mothers who lived less than 5 kilometers to the nearest health facility were 1.85 times more likely to deliver in a health facility compared to those staying more than 10 kilometers. Distance was therefore observed to be a barrier for facility delivery but not for ANC attendance. Though currently in Kenya deliveries can be attended in all the government health facilities, the fact that they are not 24 hour facilities and the urgent nature of deliveries may be the reason behind less number of health facility based deliveries.

Maternity services are not absolutely free in Kenya. In this study, the cost of delivery service in the selected health facilities was between Kenya Shillings 1000 and 2000 for normal delivery services. Mothers are expected to pay for delivery services and although the costs have been subsidized mothers still felt they were still high. Moreover, there are additional costs in transport to health facilities involved in the choice of a delivery place. The results of this study revealed that there was a significant association between the mode of payment and the place of delivery. Majority of the mothers 66% (270) who paid for their delivery in cash delivered in a health facility as compared to 4.9% (20) that delivered at home. All the mothers who paid for delivery using insurance (NHIF) delivered in health facilities. A study carried out in Kenya showed that one of the most important significant predictors of choosing an informal delivery setting (home) was whether a household member has insurance (Muraya & Mati, 1985). An earlier study in rural Western Kenya

also identified cost as a determinant of mothers' delivery place (van Eijk *et al.*, 2006). Cost is therefore an important factor in influencing mother's choice of delivery place and it would be important to either amend or abolish the fees or encourage mothers to save for health care through the National Health Insurance Fund (NHIF).

Bivariate analysis results on selected demographic variables that included: mother's level of education, delivery place, perception, satisfaction, practice and knowledge scores showed that less educated women were less likely to have their deliveries assisted by a medically trained professional and therefore the deliveries were unsafe. From the results, 76.5% mothers whose highest level of education was at lower primary level were assisted by medically untrained attendants as compared to 5.6% who had tertiary level of education. Several studies have also identified mothers' level of education as one of the factors that determines choice of delivery place as well as of birth attendants (Magadi *et al.*, 2001; Kabir, 2007; Mwaniki *et al.*, 2002; Nwakoby, 1994). Education level can therefore be related to the level of exposure to the right information with regard to delivery.

From the results, 55.3% (226) of the mothers did not plan on the delivery place prior to the delivery with majority, (58.4%) of them being decided for by their husbands. This shows that decision makers or household heads have a role to play in determining the place of delivery as well as the birth attendant. Studies carried out in various parts of the world have found a significant relationship between the household's head level of education, occupation and the delivery practice (Kabir, 2007; Seljeskog *et al.*, 2006; Mswia *et al.*,



2003). These findings could be attributed to the fact that the household heads took the centre stage in making decisions including those involving place of delivery.

Choice of delivery place is an important determinant of the delivery safety. Deliveries that took place at home were significantly associated with unsafe delivery (unskilled attendance). About 97% of unskilled attendances were reported by mothers who delivered at home during their last delivery. Mothers who chose to deliver at home were 483.6 times more likely to use unsafe delivery practice compared to those who delivered at a health facility. Birth preparedness is an important factor which can influence mothers' choice of delivery practice (Mulongo *et al.*, 2006; Mutiso *et al.*, 2008). Antenatal attendance and a birth plan are important components of birth preparedness which in this study were scored as practice in preparation for delivery. Analysis showed a significant association ( $P < 0.001$ ) between practice and utilization of skilled and/or unskilled birth attendants during delivery. Though 98% of the mothers in this study attended ANC at least once during their last pregnancy, majority of them (55.3%) did not have a birth plan which could explain the consequent low use of skilled attendants during delivery. The promotion of a delivery plan may be a good step towards sensitizing women on the issue of skilled attendance during delivery (van Eijk *et al.*, 2006).

Knowledge of risks involved during delivery was also significantly associated with the delivery practice ( $P < 0.001$ ). Majority (94.4%) of the mothers who had no correct information on safe delivery practiced unsafe delivery compared to 18.5% (24) that had the

correct information. Knowledge of risks can be linked to the source of information. Though majority of the mothers in this study got information on safe delivery from seminars/barazas, over thirty percent had no source of information or they got it from elderly women who may be misinformed leading to incorrect choices on safe delivery place as well as the qualified birth attendants. These findings were in agreement with those of a study carried out in South Africa where lack of awareness of maternity waiting homes was one of the reasons for non utilization of obstetric services (Uyirwoth *et al.*, 1996).

Independent T-test analysis showed that utilization of safe delivery practice (skilled attendance) was significantly influenced by the mothers' age and number of deliveries (parity). The analysis took into consideration the variables mean. Majority of the mothers of mean age 29.5 years (22.8-36.2 years) were attended by medically untrained individuals (unsafe delivery) during delivery as compared to those with mean age 27.3 years (21.2-33.4 years) who were attended by skilled attendants. These findings showed that younger women were more likely to utilize formal maternity services during labour and delivery unlike the older women. These findings contrast findings from a study carried out in Kirinyaga, Kenya where majority of women aged below 18 years delivered at home (Muraya & Mati, 1985). An earlier study also associated delivery practice with maternal age (Magadi *et al.*, 2001). Mothers that had three children and above were found to practice unsafe delivery as compared to those who had delivered less than 3 children. Other studies have also confirmed significance of parity with utilization of modern

maternity services where older, higher parity mothers tend to use a health facility lesser than younger, lower parity mothers (Mwaniki *et al.*, 2002; van Eijk *et al.*, 2006).

The socio-economic status of mothers has been found to influence mothers' choice of medically assisted deliveries (Uyirwoth *et al.*, 1996; Hodgkin, 1996; Cotter *et al.*, 2006). In this study, there was no significant relationship between the mean wealth score and delivery practice. This could explain the close estimates between those mothers who had safe delivery (48.2%) and those who practiced unsafe delivery (51.8%). Unlike other studies in Zimbabwe and other parts of Kenya (Mtambwira, 1985; Kimani, 1995; Hodgkin, 1996; Cotter *et al.*, 2006) where cultural factors were found to influence mothers' delivery practices, participant mothers reported this as not being an issue not only among them but also in the community. Only religious beliefs were identified as factors that could prevent mothers from seeking maternity care in health facilities in this study.

Service delivery in various maternity services is an important factor that can predict the utilization of those services. Findings showed that 53.3% (97) of the mothers, who expressed dissatisfaction with service delivery in the various maternity facilities they had attended for delivery, had unsafe delivery practices at home. These findings are consistent with other studies carried out in Bangladesh, Malawi and Kenya where poor quality of maternity care services was identified as one of the factors contributing to low utilization of maternity services by mothers (Jane *et al.*, 1995; Hodgkin, 1996; Seljeskog *et al.*, 2006;

Kabir, 2007). Both individual respondent and mothers in Focus Group Discussions (FGDs) expressed more dissatisfaction in bed sharing and inadequate personnel. Respondent mothers gave the most suggestions for improvement of service to the government health facilities. Improvement of staff attitude was the leading concern among the mothers where mothers felt that (qualitative data) due to the overwhelming numbers of clients compared to the health care personnel, the staff was unfriendly and not committed to their work. Suggestions given for improvement of service delivery at various maternities were considered as important factors deterring women from seeking to deliver in formal maternities under the supervision of skilled attendants.

Mothers' anticipations of the maternity services influence their use of the services. Improving maternal health not only requires raising awareness of complications associated with pregnancy and childbirth but most importantly providing access to high quality reproductive health services that include; antenatal, delivery, postpartum and family planning.

### **5.1 Limitations of the Study**

The study was a cross-sectional descriptive study hence no comparisons were made. The study assumed that the information given by the participants was true and not biased. The study did not capture those mothers who could not attend the chosen health facilities. This being a hospital based study; the population was different from the general population.

## CHAPTER SIX

### 6.0 CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Conclusions

- The findings of this study confirm that utilization of labor and maternity services among mothers is still low (48.2%) and 49.1 % of the deliveries took place at home.
- Based on the most recent delivery, the study found out that there was a discrepancy between antenatal clinic attendance (98.2%) and utilization of maternity services during delivery (54.3%).
- Majority of the deliveries attended by unskilled attendants were by relatives, neighbors and friends (38.6%) while TBAs only attended 1.5% of the deliveries.
- Majority (72.9%) of the mothers perceived delivery attendance between untrained delivery attendants (unskilled) and trained delivery attendance (skilled) as different.
- Majority (77.9%) of the mothers were not satisfied with service delivery in various maternity facilities where staff attitude towards mothers during labor and delivery was an issue of concern among majority (29.9%) of respondent mothers.
- Long distances travelled by mothers and understaffing in health facilities discourage mothers from seeking skilled services during delivery.
- The total number of deliveries a mother had in a lifetime, the perception on birth

attendants and the place of delivery attendance were the true predictors of delivery practice identified in this study.

- Seminars and/or Barazzas in health facilities and churches were an important forum to create awareness among mothers on risks involved in unskilled attendance during delivery.
- The type of care given to the mother as she seeks maternity services is an important factor that greatly influences mothers' choice of health facilities as a preferred delivery place.

## **6.2 Recommendations**

- In order to increase the number of mothers utilizing maternity services, the health service providers need to improve service delivery.
- There is need to set up more health facilities in rural areas to reduce the distance travelled by mothers in need of skilled delivery services.
- There is need to improve staffing in health facilities as well as train health care providers in soft skills.
- Policy should be made to create awareness regarding safe delivery among mothers and the community in general.
- Staff working in various health facilities should have frequent continuing education sessions in order to improve their sensitivity to the needs of the patients and clients.
- All mothers and untrained health workers such as the pharmacists and laboratory technicians within the communities should be trained on safe delivery practices and skills in handling quick and unplanned deliveries.
- Community oriented activities involving providing Information, Education and Communication (IEC) on maternity services, dangers associated with home deliveries, recognition of emergency situations and how to respond to them should be initiated.
- Community based education programmes should be extended to churches, market places and women groups' meetings. Mass media; print and audio-visual can play a vital role in providing knowledge about the consequences of unsafe delivery.

- More research should be carried out to explore more factors that hinder utilization of safe delivery services at the community level as well as the perspectives of the health care providers on how the services can be improved at the operational level in order to provide better guidelines for planners, administrators and policy makers.



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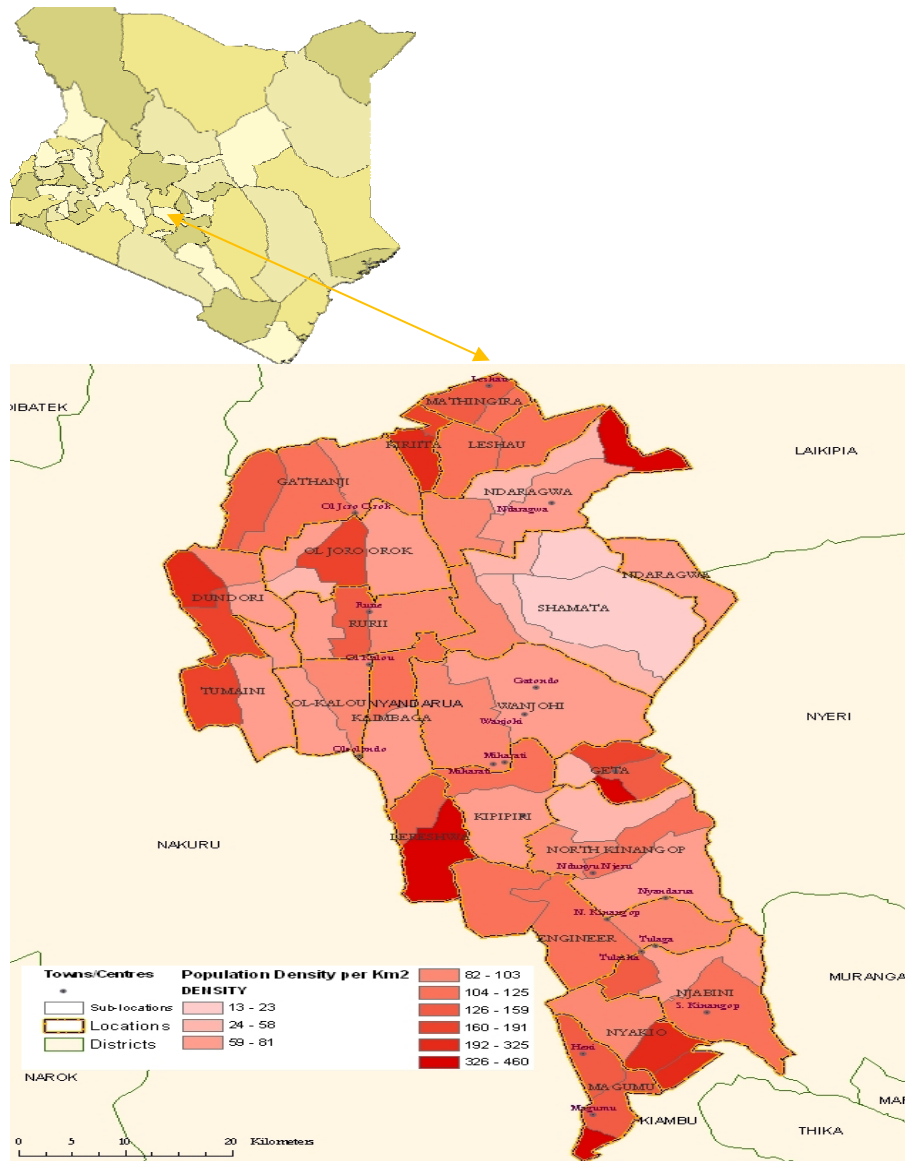
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## APPENDICES

### APPENDIX I. MAP OF NYANDARUA SOUTH DISTRICT AND ITS POSITION IN THE NATIONAL CONTEXT



**Source:** Nyandarua South District development office - 2008

**APPENDIX II. INFORMED CONSENT EXPLANATION AND CONSENT  
FORM**

**PROJECT TITLE: Delivery Practices and Associated Factors among Mothers  
Attending MCH Clinics at Selected Health Facilities in Nyandarua South District,  
Central Kenya**

**Introduction**

My name is Carol Wanjira Kagia, a public health student at Jomo Kenyatta University of Agriculture and Technology (JKUAT). We are working with my colleagues on the project named above. We would like to collect information regarding choice of delivery places, birth attendants and the associated factors among mothers.

**Purpose of the study**

In all the societies, mothers are very important persons as without them, there would be no generations to come yet they are faced with many challenges and unfortunately, their issues may not be recognized and addressed. Women are expected to bear children and play an important role of motherhood as they raise their children into responsible adults. During pregnancy and child birth however, many women especially in the developing world lose their lives due to complications during pregnancy and childbirth yet pregnancy is not a disease but a normal physiological process. To improve maternal health, it is important to find out where women deliver their children and who attends to them as well



as reasons behind their choices so as to make recommendations to the health authorities and policy makers on how they can come to the rescue of mothers by providing the necessary health services and facilities to make pregnancy and childbirth safer. However, we need your permission and cooperation to collect information on your experiences and constraints.

### **Procedure**

If you agree to participate in this study by signing the section at the end of this form, you will be interviewed on your socio-demographic information, socio-economic status, and experiences during child birth, perceptions on birth attendants and place of delivery, cultural beliefs associated with child birth if any, and access to skilled health care during child birth.

### **Precautions**

There are no risk factors involved in this study.

### **Benefits**

This study is expected to yield results on choice of delivery place and birth attendants among mothers in the study area and the factors associated with the choice of delivery place and birth attendant mothers in this study. With the findings, we shall be in a better position to advise health authorities and policy makers on the best ways of improving

maternal health not only in the study area but also in Kenya.

### **Confidentiality of the records**

Any records relating to your household information will be maintained in confidence. Your names will not appear in any of the reports from this study. No identity of any specific individual will be disclosed in any public reports or publications.

### **Obtaining additional information**

You are encouraged to ask any questions to clarify any issues at any time or ask questions at any time during your participation in the study. If you later think you need more information you may call the researcher on 0721-717120.

Any concerns or questions regarding the study and you would like to talk to any other person other than the researcher, you are encouraged to contact:

Director ITROMID

P.O. Box 62000-00200

[itromid@nairobi.mincom.net](mailto:itromid@nairobi.mincom.net)

**OR**

The Secretary,

KEMRI, National Ethical Review Committee

P.O. Box 59840-00200

Nairobi.

Tel: 0722-205901

[info@kemri.org](mailto:info@kemri.org)

**Basis of Participation**

- You are being requested to participate in this study.
- Participation is entirely voluntary.
- You are free to withdraw the consent to participate in this study at any time.
- You are free to ask any questions concerning the study which may not be clear to you after the consent had been explained to you.

**Signatures**

I, the undersigned have understood the above information which has been read and explained to me by the researcher and I voluntarily consent to participate. I have had the opportunity to ask questions and all of my questions have been answered satisfactorily.

**Name of Respondent .....** **Date.....**

**Signature.....**

### Translation

**Kuria atumia maheagirwo ciana na amatungati hamwe na maundu maria mahutanitio na mihere kuri atumia aria marathie kliniki ya MCH thibitari thure theinie wa District ya Nyandarua ya Muhuro.**

### Kiambiriria

Njitagwo Carol Wanjira Kagia, murutwo wa University ya Jomo Kenyatta. Turaruta wira turi atatu projecti ino taurie yandikitwo hau iguru. Tungienda kuoya uhoru wa kuria atumia maheagirwo ciana, uria umateithagia na maundu maria matumaga mathure kuo.

### Gitumi

Thinie wa nduriri nyingi atumia ni andu a bata muno na matangiri ho gutingikagia nduriri ingi no ni makoragwo na mathina maingi muno na uuru ni ati mathina mao ni magaga mundu wa kumaria na kumatatua. Atumia nimategemeagirwo magie ciana na marere ciana icio kinya ituike andu agima mangiikaria. Hindi iria mutumia e na nda kana akiheo mwana muno mabururi maria matathiete na mbere ta Kenya, atumia aingi nimakuaga ona gutuika kugia mwana ti murimu no ni undu wa kawaida. Nigetha tuteithie atumia kugia na ugima mwega wa mwiri ni wega kumenya kuria maheagirwo ciana, mumateithia na itumi cia guthura nigetha tumenyithie athondeki a mawatho na mitaratara uria mangiteithia atumia gukorwo hakuhi na thibitari naurigitani mwega nigetha atumia mateithike hindi iria mena nda kana makiheo ciana. No nitungienda rutha rwanyu na unyitaniri nigetha tuhote

kurogota ndeto cia mawoni na mathina manyu.

### **Mutaratara**

Angikorwo ni wetikira guteithia.caina fomu ino hau muico nigetha tukurie ciuria nini ciegie maritwa maku na miaka, utonga waku, maundu maria ugereire ukigia ciana, uria wiciragiria aria mateithagia andu kugia ciana na gwa kuherwo ciana, mawitikio na mathina hindi ino ya kuheo ciana angikorwo ni hari.

### **Mutino**

Gutiri ugwati uri ho hari kuheana mawoni maku.

### **Maciaro**

Githomo giki nikirigiriirwo kuheana utheri hari kuria atumia aingi thinie wa itura riri maheagirwo ciana hamwe na itumi cia guthura. Twina umenyo ucio nitukuhota kuheana utheri kwi anene a ugima wa mwiri na athondeki a mitaratara unduini wa guteithia atumia kugia na ugima mwega wa mwiri to district no thinie wa bururi wothe wa Kenya.

### **Uigi wa thiri wa rekodi**

Uhoru wothe ukonainie na nyumba yaku ni ukuigwo wega na thiri. Maritwa maku matikandikwo handu thinie wa riboti. Gutiri mundu ukagwetwo handu thinie wa mariboti.

### **Kuria uhoro makiria**

Niukurio na gitio urie ciuria gutaukirwo ni uhoro wothe kahinda ogothe karia ugokorwo ugituhe uhoro. Angikorwo thuthaini no wende uhoro makiria, no uhurire mwene risachi namba ya thimo ni; 0721 71 71 20.

Uhoro wothe wigie projecti ino unginda kwaria na mundu ungi tiga ucio no urie kuma kwi:

Director ITROMID

P.O. Box 62000-00200

[itromid@nairobi.mincom.net](mailto:itromid@nairobi.mincom.net)

### **KANA**

The Secretary,

KEMRI, National Ethical Review Committee

P.O. Box 59840-00200

Nairobi.

Tel: 0722-205901

[info@kemri.org](mailto:info@kemri.org)

### **Hari kuheana uhoro**

- Ni kurio na gitio uheane uhoro
- Kuheana uhoro ni kwirutira

- Wina rutha gutiga kuheana uhoro ihinda o yothe
- Wi mwitikirie kuria ciuria haria hangikorwo ti hatheru wona wataririo.

**Thaini/kirore**

Nie, nyandikitwo hau kianda nindataukirwo ni maundu maya mandikitwo maria ndathomerwo na ndataririo ni murania wa ciuria na nindetikira kumucokeria ciuria. Nindaheo mweke wa kuria ciuria na nindacokerio ciuria ciothe kinya kuiganira.

**Ritwa ria mucokia.....**

**Mweri.....**

**Thaini/kirore.....**

### APPENDIX III. QUESTIONNAIRE

**Delivery Practices and Associated Factors among Mothers Attending MCH Clinics at Selected Health Facilities in Nyandarua South District Central Kenya/ Kuria atumia maheagirwo ciana na amatungati hamwe na maundu maria mahutanitio na mihere kuri atumia aria marathie kliniki ya MCH thibitari thure theinie wa District ya Nyandarua ya Muhuro.**

Questionnaire Number: \_\_\_\_\_ Name of interviewer: \_\_\_\_\_

Name of facility: \_\_\_\_\_ Date of interview: \_\_\_\_\_

#### SECTION A

##### SOCIO-DEMOGRAPHIC DATA

1. Mother's Age group/Miaka yaku? (Please tick one):

1. 15-21

2. 22-28

3. 29-35

4. 36-42

5. 43-49

2. Marital status/Wi muhiku?

1. Married

2. Single

3. Widow

4. Separated



5. Divorced

6. Others (Specify)

3. Level of highest education attained/Wakinyirie githomo ku?

1. Lower Primary (Class 1-3)

2. Upper Primary (Class 4-8)

3. Secondary

4. College

5. University

6. Others (Specify) \_\_\_\_\_

4. Spouse highest level of education/Muthuri waku akinyirie githomo ku?

1. Lower Primary (Class 1-3)

2. Upper Primary (Class 4-8)

3. Secondary

4. College

5. University

6. Others (Specify) \_\_\_\_\_

5. Religion/Ndini yaku ni iriku

1. Christian  2. Muslim  3. Traditional  4. Others (Specify)

\_\_\_\_\_

6. How many children do you have/ wina ciana cigana? Alive \_\_\_\_\_ Dead \_\_\_\_\_

Total \_\_\_\_\_

## SECTION B

### SOCIO-ECONOMIC STATUS

1. What type of house do you live in/Wuikaraga nyumba yakitwo atia/niyaku? (Tick appropriately)

Permanent (stone/brick walled)			Semi-permanent (timber walled)			Temporary (mud walled)		
Own	Rented	Parent's/guardian's	Own	Rented	Parent's/guardian's	Own	Rented	Parent's/guardian's

2. If rented, how much do you pay per month/akorwo ni ya gukombora urihaga atia (in Ksh)? \_\_\_\_\_

3. What is your occupation/urutaga wira uriku?

1. Housewife
2. Business
3. Formal employment
4. Casual laborer
5. Unemployed
6. Others (Specify) \_\_\_\_\_

4. What is the occupation of spouse/Muthuri waku arutaga wira uriku? (if Married)?

1. Self-employed (business)

2. Formal employment
3. Unemployed
4. Casual laborer
5. Informal employment
6. Others (Specify) \_\_\_\_\_

5. What are your sources of income in order of priority/ niki gikuheaga mbecha ciaku cia mahuthiro kuma wira uria ukuheaga nyingi?

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### **PRACTICES & PERCEPTIONS**

1. How far from your home is the nearest maternity facility/Kuma gwaku kinya mataniti iria e hakuhi nit a kilomita cigana? (Approximate in km) \_\_\_\_\_

2. How do you get to the maternity facility/uthiaga naki?

1. Walk
2. Public transport
3. Cycle
4. Private transport
5. Other means (specify) \_\_\_\_\_

3. Do you discuss reproductive health issues like the choice of delivery place with your husband/Ni mwaragia ndeto cia uciari ta gwa kuhervo ciana na muthuri waku?

1. Yes
2. No

4 a) Do you decide/plan where to deliver your children/Niwe utuaga kana niukoragwo ubangite kuria ukuherwo ciana?

1. Yes

2. No

b) If no, who decides/Akorwo tiwe nu ugutuagira?

1. Husband

2. Mother

3. Mother-in law

4. Other (specify \_\_\_\_\_)

5 a) Who pays for your maternity fees/Nu ukurihagira mataneti? \_\_\_\_\_

6. Please tell us more about your deliveries; Where did you deliver your children/Wahereirwo ciana ciaku ku?

Child no.	Age at delivery	Delivered at		Delivered via		Attendant (Nil, Doctor, nurse, midwife, TBA, neighbor, family)
		Home	Hospital (name)	Normal	CS	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

7. For your last delivery, why did you choose that delivery place/health facility/Mwana waku wa muico wathurire kuria wahereirwo niki? \_\_\_\_\_

\_\_\_\_\_

8. How did you pay for the delivery care/Warihire thibitari atia?

1. Cash

2. Insurance (e.g. NHIF)

3. Others (Specify) \_\_\_\_\_

9 a) If you have never delivered in a hospital, would you ever like to deliver

there/Angikorwo nduri waherwo ciana thibitari no wende kuherwo kuo?

1. Yes                       2. No

b) Give reasons for the answer above/heana gitumi kia anja yaku

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---

10. Do you attend ANC/Ni uthiaga antenatal?

1. Yes                       2. No

11. If yes, where/ Uthiaga ku?

1. At public MCH clinic
2. At private/mission MCH clinic
3. At TBA
4. Both a and b
5. Other (specify) \_\_\_\_\_

12. At ANC, were you advised to deliver in a hospital/Wathie clinic niwatarirwo uherwo mwana thibitari?

1. Yes                       2. No

13) What are your main sources of information on safe delivery/Uhoro wa njira njega ya kuheo ciana niuri wa uigua nawauiguire ku?

1. Radio/TV
2. Newspaper/magazines

3. Barazas/seminars

4. Others (Specify)

14. What are the main reasons behind home deliveries/niki gitumaga atumia mende kuherwo ciana mucie?

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15 a) Is there any danger in delivering at home/Kwi mutino hari kuherwo mwana mucie?

1. Yes

2. No

b) If yes, please name a few dangers that you know of/njira mitino iria uui

---

---

16 a) Are there any religious/cultural beliefs associated with childbirth and pregnancy in this community/ Ni kuri mawitikio ma kanitha kana ma tene makonainie na uritu kana kuheo ciana?

1. Yes

2. No

b) If yes, please name a few that you know of/Akorwo ni kuri, njira mamwe maria ui

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17 a) Do you think TBAs/birth attendants at home attend to deliveries the same way as the trained health worker (hospital) in attending to delivery/Ni ugwiciria wakunga kana atumia aria mateithanagia micie makoragwo na uhoti/uugi wa kuheithia andu ciana ta wa dagitari?

1. Yes

2. No

b) If no, what do you think are their main differences in the way they attend to deliveries/Akorwo matihanainie ugwiciria utiganu wao ni uriku?

---

---

18. Are you satisfied with service delivery at the health facilities you have attended during child birth/Ni uiganirite na uthondekani thibitari iria uhereirwo ciana?

1. Yes

2. No

b) If no, what are you not happy with/Nimaundu mariku utakenerio nimo?

i. Are you given a chance to state your problems and ask questions? Yes   
no

ii. Are you treated with respect? 1. Yes  2. No

iii. Do you feel you can trust the health workers? 1. Yes  2. No

iv. How do you find the environment near the clinic?

1. Good  2. Bad  3 Not sure

Any others (specify)

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---

19. Do you think it is always important to deliver at a health facility/Ni ugwiciria ni undu wa bata kuherwo ciana thibitari?

1. Yes

2. No

20. Do you think there is need to improve delivery services in various maternities? (Ni ugwiciria kwi bata guthondeka makiria uria andu mathondekagwo makiheo ciana?)



1. Yes

2. No

21. If yes, what needs to be improved? (Okorwo ni kuri, ni maundu mariku ungienda mathondekwo?)

1. Private/Mission hospitals \_\_\_\_\_  
\_\_\_\_\_

2. Government health facilities \_\_\_\_\_  
\_\_\_\_\_

3. TBAs \_\_\_\_\_

#### **APPENDIX IV. FGD GENERAL INTRODUCTION & GUIDE**

My name is Carol Wanjira and I am a student of JKUAT. Before we start I would like to welcome you to this meeting and thank you all for coming.

This is a participation and discussion group for all of you and everybody has an equal opportunity to contribute to the discussion. Let me encourage you to speak your minds freely and that there are no right or wrong answers in this discussion. At the end of the discussion, the contributions will be treated as having come from the group and not an individual.

Many women are delivering at home some by choice and others because they have no alternative. Before modern medicine came here, all babies were born at home. I would like to hear your thoughts on;

- Main reasons for choosing to deliver at home/hospital
- Who are the other people involved in deciding where a woman will deliver

I am also interested to know your;

- Thoughts on maternity services being offered in different types of clinics and hospitals
- How you would like to be treated before, during and after the baby is born
- Compare government, mission and private centers in terms of service delivery during child birth
- Personal experiences and views regarding choice and place of delivery

- Experiences during delivery
- Explore- what ways services can be made more attractive
- Would all women use formal maternity services if the changes were made?

I have with me an assistant who will help me record the points that you will be sharing as I may not be able to talk listen and write at the same time. We have also brought with us a tape recorder to record this discussion because sometimes we talk faster than she can write and we would not want to miss anything. Let me assure you that the recording will only be for my own use when I'm writing out the full report.

### **Conclusion**

The discussion has been very interesting and I have learned a lot. Thank you very much and anyone with a comment is free to make it.

### Translation

Njitagwo Carol Wanjira Kagia na ndimurutwo wa JKUAT. Tutanjitie ngwenda kumukaribisha mucemano uyu na ndimwire thengio ni undu wa guka. Mushemano uyu ni wa mundu wothe na o mundu ena kahinda ga kuheana mawoni make. Reke ndi muhinyiririe kwaria hatari guoya tondu gutire anja njega na njuru. Thutha wa mushemano, miario yothe igutuo ta ya ngurubu na ti omundu.

Atumia aingi maheagirwo ciana mucie amwe ni kwenda na aria angi ni kwaga wa gwika. Mbere ya mathibitari kwanjiririo guku, ciana ciothe ciaciaragirwo micie. Ni ingienda kumenya meshiria manyu hari:

- Itumi cia gutua kuherwo ciana micie
- Ni andu ariku angi matuagira mutumia kuria ekuherwo mwana

Ningi ndina bata kumenya;

- Meciria manyu hari mataniti na uteithio uria uheanagwo makliniki na mathibitari
- Uria ungienda guthondekwo mbere, ukiheo na thutha wa kuheo mwana
- Ringanithia uruti wa wira hindi ya kuheo ciana thiinie wa thibitari cia thirikari, cia kanitha na cia andu binafsi
- Mawoni maku hari gutua gwa kuherwo ciana
- Maundu maria ugereire hindi ya kuheo ciana
- Ni maundu mariku mungienda mekwo kwagiria uruti wira
- Atumia othe no maherwo ciana thibitari maundu macio mangikwo?

Ndina andu a kundeithia kuandika maundu maria mugukorwo mukiuga tondu nonemwo ni kwaria, guthikiriria na kwandika. Ningi twina rekoda nigetha tuoye migambo tondu mundu no arie ihenya gukira uria urandika na tutirenda kwaga kuigwa kindu. Reke ndimuhakikishire ati migambo iyo tukuoya ni yakwa tu ya kuhuthira ngiandika ripoti.

### **Kurikia**

Mushemano uyu uma mweka na ni ndarikia kumenya maundu maingi muno. Thengio muno ni undu wa kahinda kau mwa he. Mundu wothe wina undu kana kiuria e na rutha rwa kuga/kuria.

**APPENDIX V. IN-DEPTH INTERVIEW GUIDE FOR THE HEALTH WORKERS**

**Date** \_\_\_\_\_

**Venue** \_\_\_\_\_


**Time interview begins** \_\_\_\_\_

**Time interview ends** \_\_\_\_\_

**Key informant(s)** \_\_\_\_\_

1. Do most mothers in this community have skilled attendance at birth?
2. Are there any beliefs and perceptions associated with pregnancy and childbirth in the community that encourage unsafe motherhood?
3. How would you rate ANC and PNC attendance?
4. Do you advice mothers on the importance of having skilled attendance at birth?
5. Why do you think mothers' delivery at a health facility is lower than the ANC/PNC attendance?
6. What are your experiences with mothers in relation to delivery practices?
7. What are your experiences with the supplies and facilities in the health centre with regard to maternity service?
8. What are the constraints you encounter as far as offering quality care to pregnant women during delivery?
9. What do you think should be done to ensure all mothers in this community have safe pregnancy and delivery?

APPENDIX VI. ETHICAL REVIEW COMMITTEE APPROVAL



**KENYA MEDICAL RESEARCH INSTITUTE**

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**KEMRI/RES/7/3/1** August 26, 2009

**TO: MS. CAROL WANJIRA KAGIA (PRINCIPAL INVESTIGATOR)**  
TM 310-0011/2008  
**ITROMID**

**THROUGH: DR. YERI KOMBE,**  
THE DIRECTOR, CPHR,  
**NAIROBI**

**RE: SSC NO. 1594 (ETHICS REVIEW): DELIVERY PRACTICES AND ASSOCIATED FACTORS AMONG MOTHERS ATTENDING MCH CLINICS IN SELECTED HEALTH FACILITES IN NYANDARUA SOUTH DISTRICT**


*forwarded 24/08/09*

This is to inform you that during the 169<sup>th</sup> meeting of KEMRI/National Ethical Review Committee held on August 18, 2009, the provisional approval granted by the Chair ERC on August 11, 2009 was ratified by the full Committee.

You may proceed with your study.

Respectfully,

*R.C. Kithinji*  
**R. C. Kithinji,**  
For: **Secretary,**  
**KEMRI/NATIONAL ETHICAL REVIEW COMMITTEE**



27 AUG 2009

In Search of Better Health