

**DETERMINANTS OF NON-UTILIZATION OF SKILLED HEALTH
ASSISTANCE DURING DELIVERY IN KENYA**

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**A Research Project Submitted in Partial Fulfillment of the Requirements
for the Award of the Degree of Master of Arts in Population Studies of the
University of Nairobi**

2019

DECLARATION

This research project is my original work and has not been submitted for award of a degree in this or any other university.

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This research project has been submitted for examination with my approval as the University Supervisor.

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ACKNOWLEDGEMENTS

I greatly acknowledge and thank the Almighty God for His grace and faithfulness through this journey to the completion of my studies.

I greatly appreciate my supervisors Prof. Murungaru Kimani and Dr. George Odipo for the guidance, support and direction they have given me during the entire process of the research project. They have impacted immensely knowledge and insights that will be forever useful in my life as a population researcher.

I also wish to acknowledge the director Dr. Khasakhala for the follow up on my studies so that I can bring it to a completion, the academic staff at PSRI including Prof. Ikamari, Prof. Agwanda, Dr. Koyugi, Dr. Wakibi, Dr. Wanjiru, Dr. Mutuku, Mr. Jarabi for their support and guidance. I would also wish to acknowledge the guidance of the late Prof. Oucho for the molding received from him; they were always willing to assist whenever called upon and approached for help to shape me as a demographer.

I sincerely appreciate the help received from the support staff at the institute as well, they whole heartedly assisted whenever I was in need. My heartfelt gratitude goes to my family and friends for the financial and moral support towards my education.

DEDICATION

This work is dedicated my father Fredrick Ondeng' who is always keen on my education, and also dedicated to Allan, Rhoda, Marcella and Kayla, may this work inspire you to achieve more.

ABSTRACT

The use of maternal health care services is an effective means for reducing the risk of maternal morbidity and mortality, especially in developing countries where the general health status of women is poor. This study aims to analyze the determinants of non-utilization of skilled health assistance during delivery in Kenya among women of reproductive age. The study used data from 2008-09 and 2014 KDHS for women with a last birth in the five years preceding the survey. Descriptive statistics and multivariate logistic regression methods of analysis were used to determine the association and significance of independent variables on non-utilization of skilled health birth attendance during delivery among women of reproductive age. The dependent variable was whether a woman used skilled health attendance during delivery in the five years preceding each survey. The main independent variables were: age of the woman, parity, marital status, level of education, wealth index, place of residence (urban-rural), religion, region of the country and use of antenatal care by the woman. The results show a notable decline in the level of non-utilization of skilled health assistance during delivery from the year 2008/09 to the year 2014. The independent variables were found to be significantly associated with non-utilization of skilled health assistance during delivery in the five years preceding both 2008/09 and 2014 surveys. In the five years preceding the 2008/09 survey, the odds of non-utilization of skilled health assistance during delivery were lower for women of age 25 and above, women with high levels of education, richer women, women in urban areas, those in Central region and women who attended antenatal health. But the odds were higher for women with high parity, women in the rural areas, non-Catholic women and women in the remaining regions. In the five years preceding the 2014 survey, the odds of non-utilization of skilled health assistance during delivery were higher for older women, women of parity 4 and higher, married and formerly married women, rural women, women of Muslim faith and women in Western and Rift Valley regions but lower for women education level of primary and above, those of middle and rich wealth index, protestant and Catholic women and women from Central, Nyanza and North Eastern regions. Therefore effort is needed to educate the general public on the importance of maternal health care services, focusing on the social structures that deter women from utilizing skilled health assistance during delivery to create and strengthen conditions that encourage the use. There should be deliberate improvement on access to health care particularly in the rural areas so as to improve on the use of skilled health attendance at delivery by the women. Policies to sustain and improve on the noted gains should be

implemented. Finally research should focus on the noted increase of younger women of age 34 years and below not utilizing skilled assistance during delivery.

TABLE OF CONTENTS

DECLARATION.....	i
ACKNOWLEDGEMENTS	iii

DEDICATION.....	iv
ABSTRACT.....	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER ONE: INTRODUCTION	1
1.1 Background of Study	1
1.2 Statement of the Problem.....	3
1.3 Research Questions	4
1.4 Objectives of the Study	4
1.5 Justification of the study	5
1.6 Scope and Limitation	5
CHAPTER TWO: LITERATURE REVIEW	7
2.1 Introduction.....	7
2.2 Role of maternal health services	7
2.3 Empirical studies on determinants of maternal health services	8
2.3.1 Utilization of maternal health services and maternal mortality	12
2.4 Summary of Literature Review	12
2.5 Conceptual Framework.....	13
2.6 Operational Framework	16
2.7 Operational hypothesis.....	17
2.8 Definition of key concepts and variables	18
2.8.1 Definition of key concepts	18
2.8.2.1 Dependent Variable	19
2.8.2.2. Independent Variables	19
CHAPTER THREE: METHODOLOGY	21
3.1 Introduction.....	21
3.2 Source of Data.....	21

3.3 Methods of Data Analysis.....	21
3.3.1 Bivariate analysis	21
3.3.2 Multivariate analysis.....	22

CHAPTER FOUR: FACTORS ASSOCIATED WITH NON-UTILIZATION OF SKILLED ATTENDANCE DURING DELIVERY24

4.1 Introduction.....	24
4.2 Background characteristics of the respondents.....	24
4.3 Association between independent variables and non-utilization of skilled assistance during delivery.....	28
4.3.1 Demographic factors.....	30
4.3.2 Socio-economic factors.....	30
4.3.3 Cultural factors.....	31
4.4 Factors associated with non-utilization of skilled assistance.....	32
4.4.1 Demographic factors.....	34
4.4.2 Socio-economic factors.....	34
4.4.3 Cultural factors.....	35
4.4.4 Use of antenatal health care services	36
4.5 Discussion.....	36

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS38

5.1 Introduction.....	38
5.2 Summary	38
5.3 Conclusion	39
5.4 Recommendation	39
5.4.1 Recommendation for policy.....	39
5.4.2 Recommendation for research	40

REFERENCES.....41

LIST OF TABLES

Table 3.1. Definition of variables and their measurements	20
Table 4.1 Frequency Distribution by Background Characteristics 2008/09 and 2014 KDHS ..	25
Table 4.2 Percentage distributions of respondents not using skilled assistance during delivery in Kenya 2008/9 and 2014 KDHS	29
Table 4.3 Factors influencing non-utilization of skilled assistance during delivery in Kenya 2008/9 and 2014 KDHS	33

LIST OF FIGURES

Figure 2.1 Framework for analyzing the determinants of maternal mortality and morbidity 15

Figure 2.2 Operational Framework for Analyzing Non-Utilization of Skilled assistance
during delivery 16

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The study of maternal mortality has attracted the attention of demographers due to the recognition of the importance of quantifying the loss of life caused by maternal death. “Maternal mortality reflects not only the risk of death per pregnancy or birth, but also the level of fertility as high fertility levels are associated with high maternal mortality levels”, (Shen and Williamson, 1999). “The lifetime risk of maternal mortality describes the cumulative loss of human life due to maternal death over the female life course” (Wilmoth, 2009, Graham et al., 2008).

Though a relatively rare event, maternal death is still a very important component of reproductive-aged life expectancy, eliminating the burden of these deaths could mean a significant increase in the most productive ages of human life. “Households affected by a maternal death are likely to experience reduced economic output due to loss of mothers and wives, changes in household duties and management that may result in increased burden on children and other household members” (Canudas-Romo et al., 2014). “Infants and young children of mothers who die have been shown to have increased risk of mortality and morbidity, increased risk of child labour at the expense of education, and reduced parental support and care” (Canudas-Romo et al., 2014).

“Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the position of the pregnancy within or outside the womb, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes, this is as defined by World Health Organization” (WHO, 2007). In African societies, women are vulnerable and marginalized and hence they are comparatively more exposed to health risks than their male counterparts. The health risks of women in developing countries are more pronounced during pregnancy and such related complications, these are amongst the leading cause of death in women within the reproductive ages (15–49) in developing countries.

“McCarthy and Maine in their study of the framework for analyzing the determinants of maternal mortality; discussed the various determinants that were categorized as distant and intermediate determinants. In their study some of the determinants included the women status in the family and the community, family status in the community, community status, health status, reproductive status, access to health services, use of health care services and unpredicted factors. All these are conditions that contribute either directly or indirectly to maternal death” (McCarthy and Maine, 1992).

“Inadequate medical facilities, treatment of complications and inadequate medical personnel contribute between 10 percent and 45 percent of all maternal deaths. It was found that socio-economic factors that determine use of maternal health services do not operate in isolation, but in conjunction with access to health services and ease of transportation” (Obermeyer and Potter, 1991).

In a study on maternal mortality in Giza, Egypt by Kane et al. (1992), it was noted that almost half the maternal deaths occurred at home or while on their way to the hospital. In this study a population-based study was done in Egypt of the magnitude and causes of maternal mortality in the Giza governorate of Egypt in 1985-86. Deaths of women in the reproductive ages were identified through the death registration system and members of the family were interviewed using the “verbal autopsy” approach. Since most deliveries occurred at home, many with the help of traditional birth attendants hence most of these maternal deaths occurred at home or on their way to the hospital. This study did point to utilization of maternal health service as an important determinant in maternal mortality.

“In Kenya, the incidence of maternal mortality is estimated to be 520 deaths per 100,000 live births”, (KNBS et al. 2010) and from the 2014 KDHS report, “the incidence of maternal mortality had dropped to 362 deaths per 100,000 live births. Studies indicate that greater numbers of maternal deaths could be avoided with widespread accessibility and utilization of maternal health care services” (KNBS et al. 2015).

1.2 Statement of the Problem

“Although availability of health care is very important, its effectiveness can only be achieved through utilization of existing services. In Kenya, maternal health care services are available but their use is low. Even in urban areas where physical accessibility is less of a constraint, about three out of ten of all deliveries still occur away from health facilities. This finding is disturbing as it indicates that a significant proportion of women fail to seek delivery by trained health workers. The risk of complications and deaths are highly increased under such situations” (Nginya, 1980).

“It is reported that large proportions (92 percent) of pregnant women in Kenya seek antenatal care from health facilities. For the births occurring during the five years preceding the 2008-09 and 2014 KDHS surveys, the expectant mothers sought some antenatal care; more than nine in ten mothers reported seeing a health professional at least once for antenatal care. Coverage is slightly higher in urban areas than in rural areas (96 percent and 90 percent respectively for 2008-9 and 97 percent and 94 percent in 2014). “Trends also indicate decline in the proportion of women who make four or more antenatal visits, from 52 percent in 2003 to 47 percent in 2008-09”, (KNBS et al. 2010) however an increase was observed in 2014 where 57.6 percent of the women made at least four antenatal visits (KNBS et al. 2015).

“Delivery by a skilled health attendance is critical to reducing maternal mortality given that about three quarters of maternal deaths occur from complications during labour, delivery and the first 24 hours after delivery. WHO therefore recommends that every delivery be by the help of a skilled health attendant who can manage normal delivery but in case of complication identify and provide basic care and referral if there is need” ((WHO, 2004), (Khan et al., 2006), (Graham et al., 2001)). “In Kenya, percentage of births occurring in health facilities was 61.2 percent from the 2014 survey (KNBS et al., 2015), this is an increase from 40 percent in 2003 to 43 percent in 2008-09 and therefore maternal deaths have been attributed to delivery without skilled birth attendance. It has been recommended globally that high quality health facility delivery services are the solution to preventable maternal and neonatal deaths” (McKinnon et al., 2015). “Utilization of postnatal services is also low compared to antenatal services, only with slight improvement from over the years to 2014. The rural women are more likely to deliver without assistance from a health professional. High proportions of such births are recorded to occur in Western, Rift Valley

and North Eastern provinces. Therefore, such women are more at risk of deaths that can be prevented with effective use of modern medical facilities” (KNBS et al. 2010).

“In the assessment of health facility readiness to provide maternal health services, it was found that most facilities in Kenya have the basic equipment and structure to provide delivery services”, (Mbaire, 2012). Hence the 46 percent of women delivering under skilled care is an under-utilization of the already available health care services; people do not have the knowledge on importance, or the incentive to use the available services. Hence to increase the levels of utilization of maternal health services, besides availing the services, the social factors that influence the individual’s demand for care also needs to be considered.

To encourage women in Kenya to use maternal health care services; apart from improving the quality and accessibility of such health services, more effort needs to be made in providing people with information on the importance and benefits of use of maternal health care. At the same time seek to better understand the general population’s strain in utilization of maternal health care services. This study sought to examine skilled delivery assistance pattern and the determinants for non-use of skilled assistance during delivery in Kenya.

1.3 Research Questions

This study sought to answer the following questions:

1. What are the levels of non-utilization of skilled assistance by women during delivery in Kenya?
2. What are the determinants of non-utilization of skilled assistance during delivery in Kenya?

1.4 Objectives of the Study

The general objective of the study is to establish factors influencing utilization of skilled birth attendance at delivery, and then appropriate strategies and policies can be developed to encourage the utilization of skilled care attendance during delivery in the country to improve women's health services utilization behavior, and hence lower maternal mortality.

The specific objectives of the study are;

1. To establish the differentials in utilization of skilled birth attendance service in Kenya.

2. To establish the determinants of non-utilization of skilled assistance during delivery in Kenya.

1.5 Justification of the study

Kenya endorsed the International Safe Motherhood Initiative of 1987 whose main concern was achieving a prolonged healthy life for the women by prevention of early death, one of the objectives being to “flag the major information gaps on maternal mortality and morbidity in Kenya”. Majority of female adult deaths are due to pregnancy related causes with the highest incidences of maternal mortality Kenya being reported in rural areas, hence this is an important research area.

“Research has shown that adequate use of antenatal and delivery services can reduce maternal deaths by between 10 percent and 45 percent; especially in the developing countries where maternal mortality is highest”, (WHO (A), 1997). “For 96 percent of births occurring during the five years preceding the 2008/09 KDHS, the expectant mothers sought some antenatal care. In the five years preceding the 2008/09 survey, 46 percent of the deliveries happened under skilled care despite the high level of antenatal attendance” (KNBS et al. 2010). This disturbing finding is a pointer that a significant proportion of women fail to seek delivery assistance from trained health workers. There is need to understand the levels of non-utilization of skilled assistance during delivery over the years and also the factors that are responsible for this phenomenon. This research anticipates shedding light on the same through the study of the patterns of skilled delivery assistance sought by the women and factors that influence women’s non-use of these services.

1.6 Scope and Limitation

The data used is secondary and hence limited to factors in the KDHS data. Attitude or opinion variables that would have been important for analyzing situation related to child birth were not collected in the survey. “These can be explained in qualitative studies that have been carried out to explain the phenomenon of low utilization of such services and also reviewed in the literature” (KNBS et al. 2010 and KNBS et al. 2015).

“Data used in this study is of quantitative nature thus it does not offer explanations to findings in this study for example quality of care, cost of transport and distance to the health facility, which are some of the possible factors determining the utilization of maternal health care services” (Magadi et al. 2000b). Some explanations to these factors were deduced from the literature reviewed on utilization of maternal health services by women that was done.

The study focuses on women seeking skilled assistance during delivery and does not include other maternal health care services like use of post natal care services and family planning, as well it does not include information regarding place of delivery.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The provision and utilization of maternal health care is important in reducing maternal morbidity and mortality and as well enhancing child survival. A number of scholars consider health care services as being very important in determining the overall mortality levels in developing countries. There are reported differences in maternal health care utilization particularly in antenatal care and skilled birth attendance. A growing body of literature has explored the links between utilization of maternal health services and maternal outcomes. This chapter seeks to present various studies that have been done on utilization of maternal health services to improve maternal outcomes including maternal mortality. The literature examines the determinants of utilization of maternal health services in the sections as found below.

2.2 Role of maternal health services

“It has been well recognized from various literature that maternal health services have a critical role to play in the improvement of women’s reproductive health. Furthermore, some studies have also pointed out that the utilization of these services, or health-seeking behavior in general, is a complex behavioral phenomenon” (Magadi et al., 2000a). “Suggestions of the most effective ways of reducing the risk of death among pregnant women are: increasing accessibility and use of essential obstetric services, increasing awareness of the signs and symptoms of birth-related complications among women, their families and traditional birth attendants, improving the availability and quality of services at health referrals. Increased use of essential services when complications arise would significantly reduce the number of maternal deaths” (MOH, 1997; McCarthy and Maine, 1992).

“While use of prenatal care is simply a matter of individual choice, type of assistance during delivery is as a result of choice, access, and decisions by health care providers as well” (Phillips, 2001). “In the Kenyan case, access to and use of quality delivery care are essential to reducing maternal morbidity and mortality” (KNBS et al. 2010). Use of professional assistance during delivery will significantly reduce the number of maternal deaths, one need to understand the factors that inhibit the use of maternal health services so that appropriate actions can be taken to remove the barriers.

“Although the decision to seek care is an individual choice, several factors influence the decision of the individual. Some of these factors are related to the characteristics of the health delivery system such as the availability, quality, and cost of the services that will undoubtedly influence an individual’s decision. Other factors such as the social structure and the health beliefs of the individual and the community are also determining factors. The United Nations General Assembly recommends increasing the proportion of births assisted by health professionals (doctors, nurse-midwives, and nurses with midwifery skills) to 80 percent to reduce the number of maternal deaths in developing countries” (UNCEF, 2007).

“In sub-Saharan Africa, the proportion of pregnant women who seek antenatal care is disproportionately higher than those whose deliveries are assisted by health professionals. This disproportion varies by geographical area. In Kenya as of 2008-09, the proportion of deliveries supervised by health professionals was 74 percent in urban areas compared with only 36 percent in rural areas” (KNBS et al. 2010), “there was an observed increase in 2014 to 82.4 percent in urban to 50.4 in the rural areas” (KNBS et al. 2015).

Complications related to pregnancy and childbirth are among the major causes of mortality among women of reproductive age in many developing countries. Inadequate maternal health care is associated with increased levels of adverse pregnancy outcomes. The use of maternal health services, like prenatal care and professionally assisted delivery, improves the general health and well-being of women.

2.3 Empirical studies on determinants of maternal health services

“Studies on health seeking behavior have identified the importance of the characteristics of health services such as the availability and accessibility of services to the general population in determining increased utilization” (Magadi et al., 2000a). Magadi et al. (2000a), have argued that “increasing the availability and accessibility of the health services is sufficient to increase utilization. They assert that where services are available, both educated and uneducated people will make equal use of them”. “Other studies have also found that physical access to care and travel times to a health facility are significant predictors of use of these services. The increase in the frequency of use of maternity services has been found to be directly related to the proximity of users to an antenatal clinic” (Magadi et al., 2000b).

Iyaniwura and Yussuf (2009) in their study of utilization of antenatal care and delivery services in Sagamu, South Western Nigeria found that “formal maternal education had a positive effect on the use of ANC services with frequent visits and use of health facilities for delivery. The effect was more significant among women with at least secondary school education. This effect of education was associated with better exposure to information and high income”.

Heston Philips while carrying out a study on utilization of maternal health care among African women in South Africa in 2001-2002, investigated “the different patterns of maternal health care use among African women. The study showed that use of prenatal care varied somewhat with family of origin characteristics, women aged 20-24 years were found to be more likely to use doctor assisted prenatal care than younger women. There were differences in maternal care usage across ethnic divisions, mother’s education significantly affected use of maternal health services especially women with secondary education or higher used doctor assisted prenatal care significantly more than those with some secondary education, primary education or less. Maternal education was found to be an important predictor to the type of medical personnel present during delivery but it was only significant at higher levels. It was also found that rural place of residence had a stronger negative association on delivery care than on prenatal care while urban place had a stronger association with delivery care than with prenatal care”.

“The 2001 Bangladesh maternal health services and maternal mortality survey indicated that high maternal mortality districts were predominantly located in the coastal and hill tract regions, economically disadvantaged areas where road communication and transportation systems are weak and little use of maternal health services was the case in these areas. Maternal mortality was also pronounced in Sylhet division, a high-fertility area known to be socially conservative” (BMHS & MMS, 2001).

Yared and Asnaketch (2002) in a study of utilization of maternal healthcare services in Ethiopia in 2002 found that “use of professionally assisted delivery service was very low in Ethiopia, and they were lowest in rural areas. There was little difference in utilization of postnatal care by age; women’s education was associated with use of maternal health care in Ethiopia, with use of maternal health services increasing with increase in education.

Utilization of maternal health care was generally low for those mothers of birth order five and above, residence and education were found to be the most important determinants of antenatal care utilization, marital status and religion also had an influence in determining antenatal care use. Professionally assisted delivery to mothers was also found to be inversely related to women's parity. Women's education was important to utilization of professionally assisted delivery in the rural areas; residence and education were the only factors that significantly influenced the use of postnatal care in Ethiopia".

In a study of maternal health care utilization in Vietnam by Malqvist et al. in 2013, "they found out that household economic status, maternal education and ethnicity were associated with maternal health care utilization. Maternal age was not associated with antenatal care attendance or place of delivery. The study showed persistence in inequities in maternal health care utilization in Viet Nam along socioeconomic and ethnic lines. There was increase in utilization of maternal health care services in the rural population which was unevenly distributed among ethnic groups and women in different economic strata. They posited that people's ability to pay for health care services parallels the increasing income divide in society. The less educated and poorer, ethnic minorities faced cultural and linguistic barriers in accessing health care that were compounded by lack of culturally sensitive programmes and interventions".

"In the Kenyan context, access to and use of quality delivery care are essential at reducing maternal morbidity and mortality. Improving the quality of obstetric care in facilities is an essential strategy for reducing maternal and new born deaths" (Van den Broek and Graham, 2009). "A study on the Health facility readiness to provide maternal health services in Kenya indicated that most facilities in Kenya have the basic infrastructure needed to provide basic delivery services, within Nairobi region none of the facilities assessed attained a low score, meaning all the facilities assessed had the basic equipments and structure to provide delivery services" (Mbaire, 2012). This essentially shows an adequate availability of maternal health services for use in Kenya which is a determinant in utilization of maternal health services.

"In a study by Cotter et al. 2006, there is lack of sensitization amongst the women regarding the importance of skilled attendance at delivery. Since the previous generation delivered at home so too will this generation of women, these women have witnessed deliveries at home

and since its only a minority of these deliveries were complicated by life threatening events, witnessing of normal deliveries in a woman's own life or in that of her friends or relatives reinforces the idea that delivery at home is safe. The study goes on to note that the perception of the health facility being a harsh environment for childbirth is also a setback in improving utilization of maternal health care services. The women say that they are left alone during labor pain at the health facilities, while the TBA will stay with you as the woman in labor and helps you deal with the pain. This is a reflection of the chronic-understaffing in the health facilities, for example when a woman is in labor at the maternity ward for example during the day, the nurse on duty attends to not only to her labor but also to the busy outpatient clinic for children and adults. The study observes that under these circumstances it is not unusual to find a woman laboring alone for a large portion of time without the nurse present with her while under the medical care of a health facility”.

“From the woman’ perspective, studies have revealed that some of the barriers to use of maternal health care include distance to the health facility, frequent absence of any available transport and the cost of transport when it is available. This results to delay in seeking for maternal health services for example ANC services and even delivery services, this also points to the low economic status of the women” (Ochako et al., 2011).

“The value women place on delivery by TBAs due to the social role these TBAs play in communities is recognized and respected and therefore their attendance is highly valued. Adding to that a minority of the women believe that childbirth-related complications are caused by witchcraft, and TBAs are perceived as better equipped to intervene in these cases” (Cotter et al., 2006).

“In a study of factors of non-utilization of postnatal health services in Indonesia, the prevalence of non-utilization of postnatal care services was consistently higher in the rural than in the urban areas for each region. At the household and individual level, low attendance at postnatal care services was associated with high parity, low household wealth index, poor maternal knowledge of complications during pregnancy, childbirth or postnatal period and no maternal exposure to mass media such as newspapers, radio or television” (Titaley et al., 2009).

2.3.1 Utilization of maternal health services and maternal mortality

Many scholars consider health care services to be very important in determining the overall mortality levels in developing countries. “From studies done in the Matlab area of Bangladesh, a drop in the cases of maternal mortality was noted, it was also noted that of all the admissions into the Matlab hospitals only one third of them were referred, the other two thirds were self referral and hence many maternal deaths were prevented by use of the maternal health service that was set up for the study purposes. This pattern of self-referral strongly suggest that if quality emergency obstetric services are available, substantial numbers of people will use them, even in the absence of community interventions encouraging use. Use of these available maternal health services for example treatment of obstetric complications and referrals for advanced cases of maternal obstetric complications reduced cases of maternal mortality in the Matlab area” (Maine et al., 1996a).

“In a study ‘Can skilled attendance at delivery reduce maternal mortality in developing countries’, where analysis was done on maternal mortality data and the kind of delivery assistance that the mothers received during delivery, it was noted as the proportion of deliveries attended by doctors increases, the level of maternal mortality appears to exponentially decrease. It was also noted that many developing countries with relatively low maternal mortality have more than a third of deliveries with doctors, and in the case of three Central American countries more than two-thirds” (Graham et al., 2001).

2.4 Summary of Literature Review

“Available literature on use of maternal health services shows that maternal health services often make the difference between life and death, and the single most important proximate determinant of maternal survival is the extent to which women have access to and utilize high quality maternal health care services. The World Health Organization defines skilled health or birth attendance during delivery as delivery under the assistance of an accredited health professional who has been trained and educated to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, deliveries and the immediate postnatal period and in the identification, management and referral of complications in women and newborns” (WHO, 2004). Compared to antenatal care services, use of modern delivery care services is comparatively low with just more than half the women using skilled attendance during delivery.

“Use of maternal health services is an effective approach to reducing the risk of maternal morbidity and mortality, especially in places where the general health status of women is poor. Attending antenatal clinics and delivery with the assistance of skilled professionals (doctors and nurses) can lead to marked reductions in maternal morbidity and mortality through early detection and management of potential complications” (Anyia et al., 2008, Ochako et al., 2011, Mpembeni et al., 2007, Magadi et al., 2001). For all women, use of health care services is a key proximate determinant of maternal and infant mortality. Timely and appropriate care can provide an opportunity to prevent or manage the direct causes of maternal mortality, which include hemorrhage, obstructed labor, unsafe abortion, infection and hypertensive disorders, to reduce maternal mortality.

“Studies in Kenya, shows that use of maternal health care is determined by age, education, parity and distance to the health facility. Mothers with higher education are more likely to use health care services during delivery. Magadi et al. (2000a), indicate in their study that use of antenatal care services in Kenya is associated with a range of factors including socio-economic, cultural and reproductive factors. The availability and accessibility of health services and the desirability of a pregnancy are also important, women with higher parity often do not deliver in the hospitals”.

2.5 Conceptual Framework

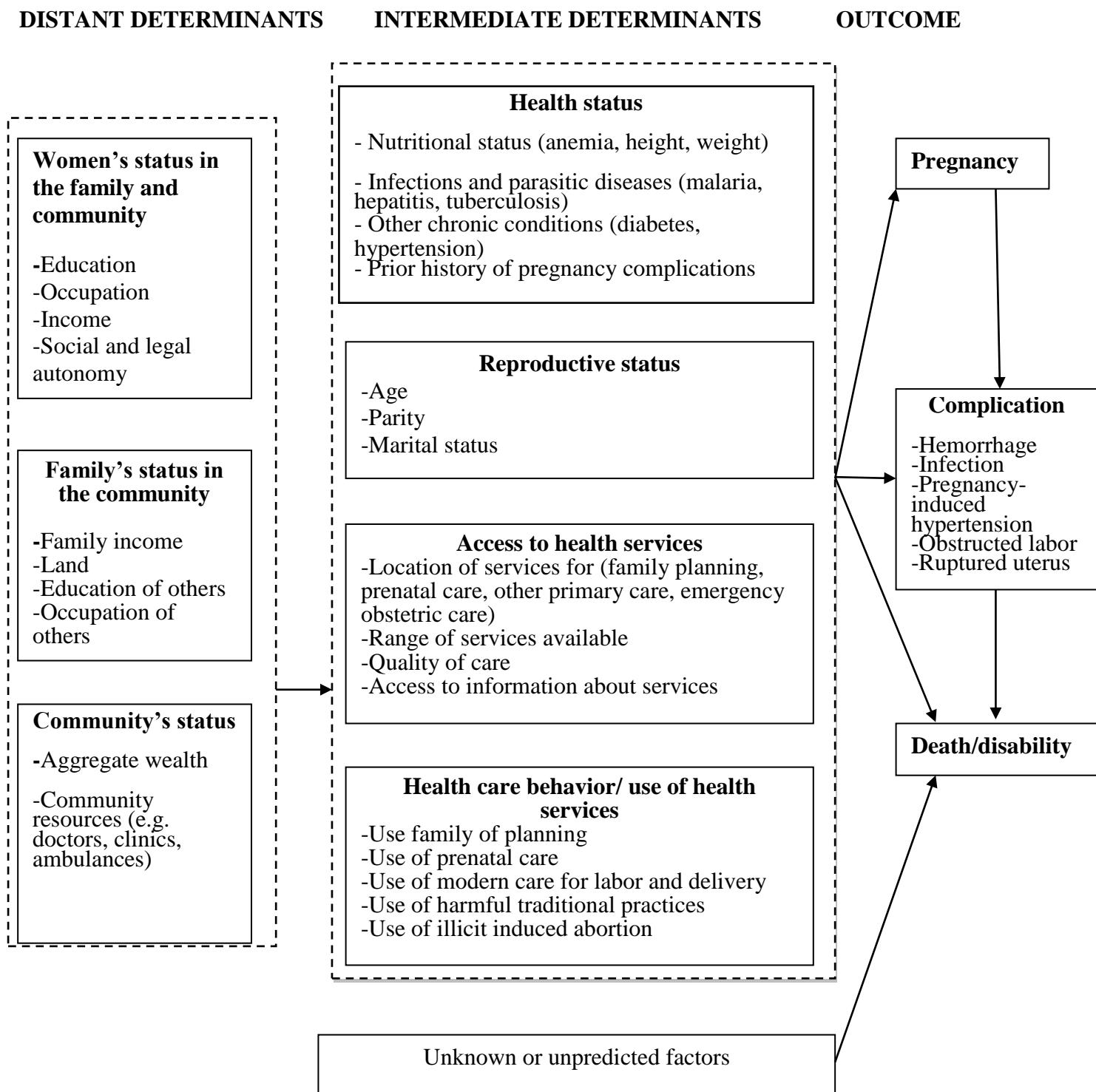
From the literature review, several studies particularly in the developing countries, have explored the economic and socio-cultural barriers that hinder women from seeking maternal health care services. “The World Health Organization Expert Committee on Maternal and Child Health (MCH) stated that if MCH care programmes were to be effective, they must concern themselves not only with immediate causes of morbidity and mortality, but with the social organizations and values that characterize the populations. This is because pregnancy and childbirth in Africa are entrenched in beliefs and customs that affect health and health care sought” (WHO, 1997a).

This study utilizes McCarthy and Maine conceptual framework for analyzing maternal mortality as utilization of maternal health care services is one of the determinants of maternal mortality. This framework has been utilized by Gitobu et. al (2018) in their study of “The

effect of Kenya's free maternal health care policy on the utilization of health facility delivery services and maternal and neonatal mortality in public health facilities" in 2013. Patience A. Afulani and Cheryl Moyer (2016) also draws from this framework in their study of "Explaining disparities in use of skilled birth attendants in developing countries: A Conceptual Framework."

"The framework is organized around three general components of the process of maternal mortality where closest to the event of a maternal death are pregnancy and pregnancy-related complications. A woman must be pregnant and experience some complication of pregnancy or childbirth, or have a preexisting health problem that is aggravated by pregnancy, before her death can be defined as a maternal death. This sequence of outcomes is most directly influenced by five sets of intermediate determinants: the health status of the woman; her reproductive status; her access to health services; her health care behavior (including her use of health services); and a set of unknown factors.

Finally, a set of socioeconomic and cultural background factors is at the greatest distance from a maternal death. Considering pregnancy and pregnancy complications as part of the sequence of events or outcomes that culminates in maternal disability or death leads to an obvious but important set of propositions and hence any factor that is thought to influence maternal mortality, and therefore any efforts to reduce maternal mortality, must operate through these events (that is pregnancy and pregnancy related complications)" (McCarthy and Maine, 1992).

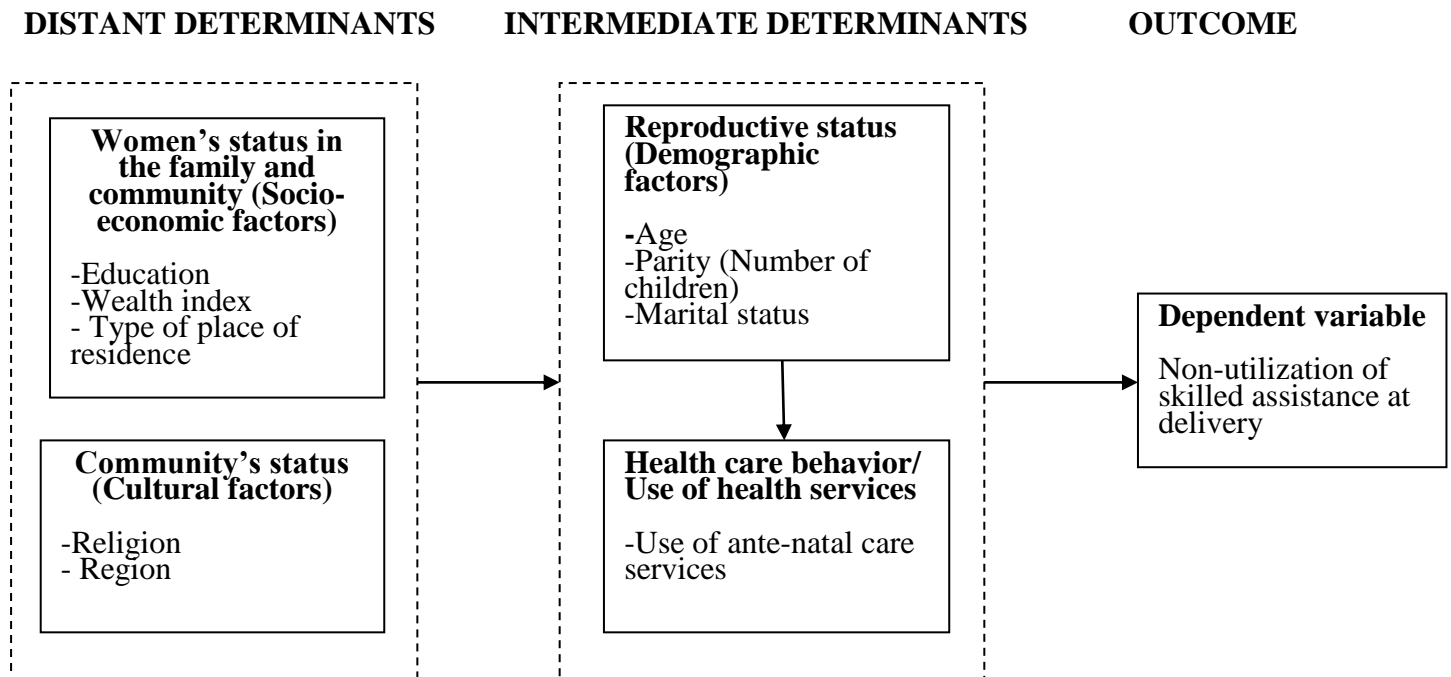


Source: McCarthy and Maine (1992)

Figure 2.1 Framework for analyzing the determinants of maternal mortality and morbidity

2.6 Operational Framework

For this study focus was not on the same outcomes as in the McCarthy and Maine theoretical framework but on the component of use and access of health care services hence though adopted from McCarthy and Maine framework theoretical framework and guided by it, the operational frameworks took a different outlook from the theoretical framework as illustrated below.



Source: Adopted from the Framework for analyzing the determinants of maternal mortality and morbidity by McCarthy and Maine (1992)

Figure 2.2 Operational Framework for Analyzing Non-Utilization of Skilled assistance during delivery

The operational framework is organized around the components of demographic, socio-economic and cultural factors as well as use of other maternal services as being factors that influence the non-use or use of skilled assistance during delivery by a woman. Factors like education of a woman, wealth index, type of place of residence, religion, region of residence, age, parity, and marital status as well as use of antenatal care will all act together to influence the non-utilization of skilled assistance during delivery. The operational framework assumes that with high use of ANC then this would have an effect on use of facility for skilled birth assistance during delivery; as well a high use of PNC would mean the women having delivered at the facility. However the analysis does not include access to health care services because KDHS data used in the study does not collect that data. This is in spite of the fact that it is access to health care services that influences utilization of such services.

2.7 Operational hypothesis

The tests of the role of socio-economic, demographic and cultural factors play in influencing non-use of skilled assistance during delivery in Kenya.

Socio-economic factors

The socio-economic factors considered for this study are the level of education, the wealth index and the type of place of residence of a woman that influence their use of skilled health assistance during delivery, by either promoting or hindering or being a barrier to their use of skilled assistance during delivery.

Demographic factors

The demographic factors in this study are age of the woman, the parity and the marital status of the woman. These factors have either encourage use of skilled attendance during delivery or they become a barrier to use of skilled assistance during delivery by the woman.

Cultural factors

The cultural factors considered for study are religion and the region of residence of the woman, as these factors have an influence on the woman's use of skilled assistance during delivery.

Use of antenatal health care services

The use of antenatal care services was studied as exposure to some form of maternal health care was considered as an influence on the woman's use of skilled assistance during delivery.

These hypotheses were tested by carrying out cross-tabulation during the bivariate analysis where chi-square test was done. The P-value ($P \leq 0.05$) helped determine the significance of the results.

2.8 Definition of key concepts and variables

2.8.1 Definition of key concepts

i. Maternal health services

This is the health care that is provided to mothers and babies during pregnancy, childbirth and the postpartum period.

ii. Maternal Mortality

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

iii. Socio-economic factors

Socio-economic refer to the prevailing individual economic conditions that have an effect on use or non-use of skilled assistance during delivery

iv. Socio-cultural factors

These refer to the prevailing conditions of communal relevance and have an effect on use or non-use of skilled assistance during delivery.

v. Demographic factors

These refer to the biological characteristics or reproductive status of the woman that have effect on use or non-use of skilled assistance during delivery.

2.8.2 Definition of variables

2.8.2.1 Dependent Variable

i. **Non-utilization of skilled health attendance during delivery**

Women in the survey were asked on who assisted them during delivery of their last child, the options for response included doctor, nurse or midwife, auxiliary nurse or midwife, traditional birth attendant (TBA), relative or friend, other, or no one (self). For this study, a binary variable was created, “non-utilization of skilled health attendance during delivery”: coded as 1(not delivered by a skilled health attendant) if TBA, relative or friend, any other hospital staff, or no one (self); and 0 (delivered by a skilled health attendant) if doctor, nurse or midwife, or auxiliary nurse or midwife was mentioned.

2.8.2.2. Independent Variables

- i. **Wealth Index:** This refers to the long term standard of living of the household that that the respondent belongs to. This is categorized into poor, middle and rich.
- ii. **Education:** Education level represents the highest level of formal schooling attained by the respondent. The categories will be no education, primary education, secondary education and higher.
- iii. **Place of residence:** Place of residence refers to the place where the respondent was at the time of the interview, categorized mainly as rural and urban.
- iv. **Region of residence:** Region of residence refers to the province where the respondent was at the time of the interview, this variable will be used as listed in the KDHS.
- v. **Religion:** Religion refers to the religious group to which the respondent is affiliated at the time of the survey; they are Roman Catholic, Protestant/ other Christian, Muslim, and no religion/ others.
- vi. **Age:** Age refers to the number of completed years lived by the respondent and this will be grouped into 15-24; 25-34; 35-49.
- vii. **Marital status:** Marital status refers to the state of union that the persons were involved in at the time of the interview. Three categories will be included in this study never married, currently married and formerly married.
- viii. **Parity level:** Parity level refers to the total number of children ever born to the respondent at the time of the interview. The three categories included in this study are parities 1-3 children; 4-6; and 7+.

- ix. **Use of ante-natal care:** This refers to the number of visits made by the respondent to the health facility for ANC services. This will be categorized into no antenatal visit; 1-2 antenatal visits; 3 antenatal visits and 4+ antenatal visits.

Table 2.1. Definition of variables and their measurements

Definition of variables and their measurements			
Variables		Variable type	Variable options
Non-utilization of skilled attendance at delivery		Dependent	0=Utilization 1=Non-utilization
Demographic	Age group	Independent	1=15-24 2=25-34 3=35-49
	Parity	Independent	1= 1 2=2-3 3=4+
	Marital status	Independent	1=Never married 2= Currently married 3=Formerly married
Socio-economic	Education	Independent	1=No education 2=Primary 3=Secondary 4=Higher
	Wealth index	Independent	1=Poor 2=Middle 3=Rich
	Type of place of residence	Independent	1=Urban 2=Rural
Socio-cultural	Region of residence	Independent	1=Nairobi 2=Central 3=Coast 4=Eastern 5=Nyanza 6=Rift Valley 7=Western 8=Northeastern
	Religion	Independent	1=Roman catholic 2=Protestant/other Christian 3=Muslim 4=No religion/other
Exposure to modern health care services	Antenatal care	Independent	1=No antenatal visit 2=1-2 antenatal visits 3=3 antenatal visits 4=4+ visits

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the source of data used, indicating the sample size, methods of data analysis that is applied, and a table showing the variables how they are defined and their measurement as used in this study.

3.2 Source of Data

“The study utilized data collected during the Kenya Demographic and Health Surveys in the years 2008/09 and 2014 by the Kenya National Bureau of Statistics in collaboration with other stakeholders” (KNBS et al. 2010 and KNBS et al. 2015). The KDHS is a nationally representative survey of women of reproductive age (15–49 years). In this study, data was derived from the women file subset that has data collected on age, education, wealth index, religion, type of place of residence, marital status, ANC visits as well as region of residence of the women in both survey years. Determinants of non-utilization of skilled assistance during delivery are derived from data of women who had a delivery in the five years preceding the survey.

3.3 Methods of Data Analysis

This study utilized cross-tabulation and logistic regression as the main methods of data analysis. These methods are described below.

3.3.1 Bivariate analysis

Bivariate analysis was done to examine the differentials in utilization of skilled assistance during delivery and this gave the countrywide pattern. Chi-square test was conducted to determine any significant relationships existing between the dependent variable and each independent variable. To show statistical significance, Pearson’s chi-square test was used to measure dependence of the association. However chi-square test has limitations which include being sensitive to sample size, that is the size of the calculated chi-square is directly proportional to the size of the sample. Chi-square is also sensitive to small expected frequencies in one or more of the cells in the table. While chi-square shows us the statistical significance it does not give us much information about the strength of association.

3.3.2 Multivariate analysis

Logistic regression is statistical analysis method for analyzing data sets in which there are one or more independent variables determining an outcome measured by a dichotomous dependent variable having only two possible outcomes; success or failure. It employs binomial probability theory in which there are only two values to predict: that probability (p) is 1 rather than 0 that is non-utilization of skilled health assistance or utilization of skilled health assistance during delivery. Logistic regression is used to estimate the effect of independent variables on the dependent variable, it is used to find the best fitting model to describe the relationship between the dichotomous characteristic of skilled health assistance and a set of independent variables, hence logistic regression generates coefficients of a formula to predict a logit transformation of the probability of non use of skilled health assistance during delivery. The best fitting equation maximizes the probability of classifying the observed data into the appropriate category given the regression coefficients.

The parameters in the logit model may be interpreted as ordinary regression coefficient where positive values indicate that the independent variables or their interactions raise the log odds of the independent variables while negative coefficient shows lower log odds. An odds is the ratio of the frequency of being in that one category to not being in that category. It is interpreted as the chance that an individual randomly selected will be observed to fall into the category of interest. The odds ratio is used in logit analysis to measure the effect of independent variables on the dependent variables. In logistic regression one directly estimates the probability of an event occurring for one independent variable such that:-

$$\text{Probability of event (p}_x\text{)} = \frac{e^{B_0+B_1X}}{1+e^{B_0+B_1X}}$$

Where B_0 and B_1 are coefficient estimated from the data, X is the independent variable and e is the base of the natural logarithms (approximately 2.718).

For more than one independent variable, the model can be written as:-

$$p_x = \frac{e^Z}{1+e^Z} \text{ or } \frac{1}{1+e^{-Z}}$$

Where $Z = B_0 + B_1X_1 + B_2X_2 + \dots + B_pX_p$

The P_x values range from 0 – 1. For each explanatory variable will be assigned category which has an odds ratio of 1.00. If the odds ratio of a given category is less than 1.00, it

indicates that lower chance of that occurrence, while if it is more than one, it indicates a higher chance of the occurrence compared to the reference category. The demerit of this model is that in case of low sample size, it does not give good results. The analysis was limited to women who had a birth in the five years preceding the survey and it looked at the recent birth to the women. The dependent variable takes the value one if a woman does not use skilled health attendance during delivery and zero if she used. The overall model is used to predict non-utilization of skilled health assistance during delivery, an outcome of 1 is a success where success is a response of non-utilization while 0 is failure which is a response of utilization of skilled health assistance during delivery by the woman.

CHAPTER FOUR
FACTORS ASSOCIATED WITH NON-UTILIZATION OF SKILLED
ATTENDANCE DURING DELIVERY

4.1 Introduction

This chapter presents the results of the analysis of the data. The first section describes the characteristics of the study population and the levels of non-utilization of skilled assistance during delivery. The second section presents the results of a cross tabulation which describes the associations between each of the independent variables and non-utilization of skilled assistance during delivery. The third section presents the results of logistic regression analysis. A score derived from information on whether the respondent reported non-use or use of skilled delivery assistance during delivery was used to determine the non-utilization and utilization of skilled assistance during delivery.

These analyses and interpretations was based on the samples of 6102 and 14949 women aged between 15-49 who had births in the five years preceding the 2008-09 and 2014 Kenya Demographic and Health Surveys respectively. This chapter addresses the objectives of establishing if the women seek skilled assistance during delivery and establish the differentials among the women according to socio-economic, demographic and by exposure to modern health services.

4.2 Background characteristics of the respondents

The number of women (15-49) who took part in the 2008-09 KDHS was 8,444 however the question on utilization of skilled assistance during delivery was addressed to those who had given birth in the five years preceding the survey. There were 6,201 women respondents who had births in 2008-09 and 14,949 women respondents had births in 2014 and this formed the basis of this analysis. Table 4.1 below represents the distribution of study population according to the background characteristics.

Table 4.1: Distribution of Respondents by Background Characteristics 2008/09 and 2014 KDHS

Variables	Categories	Frequency (%)	
		2008/09	2014
Dependent variable	Non-utilization	68	62.3
	Utilization	32	37.7
Demographic variables			
Age group	15-24	23.9	28.9
	25-34	38.9	49.0
	35-49	37.2	22.1
Number of Children/Parity	1-3	19.4	59.7
	4-6	36.9	28.4
	7+	43.7	11.8
Marital status	Never married	8.4	7.8
	Currently married	78.0	82.5
	Formerly married	13.7	9.7
Socio-economic variables			
Highest educational level	No education	17.6	18.7
	Primary	54.3	52.5
	Secondary	21.1	21.5
	Higher	7.0	7.4
Wealth Index	Poor	37.5	50.6
	Middle	17.3	17.6
	Rich	45.1	31.8
Type of place of residence	Urban	28.8	34.5
	Rural	71.2	65.5
Cultural variables			
Religion	Roman Catholic	19.5	19.2
	Protestant/Other Christian	60.9	63.4
	Muslim	16.1	14.6
	No religion/other	3.6	2.8
Region	Nairobi	9.4	2.9
	Central	11.6	8.0
	Coast	13.7	12.4
	Eastern	13.5	15.4
	Nyanza	16.5	13.9
	Rift Valley	15.8	31.8
	Western	12.3	9.4
	North Eastern	7.1	6.2
Use of antenatal health care			
Antenatal visits	No visits	6.3	6.2
	1-2 visits	10.3	13.9
	3 visits	18.3	25.4
	4+ visits	32.1	54.1

Source: Study data

As shown in Tables 4.1 above, in the KDHS survey period 2008/9, the majority (68 percent) of the respondents reported that they did not receive skilled attendance at delivery while the remaining 32 percent had received. There was change in utilization trend however in the period of five years prior to the 2014 KDHS survey. The women who reported to have not utilized skilled assistance during delivery had decreased to 37.7 percent while those who reported to have utilized skilled assistance during delivery were 62.3 percent.

In terms of age, in the 2008/9 KDHS most of the respondents were in the group 25-34, this group accounted for 38.9 percent of the respondents. Women aged 35-49 were 37.2 percent while 15 – 24 age group were 23.9 percent. In the 2014 KDHS survey the age group 25-34 still had the highest percentage of the respondents 49.0 percent, women of the age 15-24 were 28.9 percent and women of age group 35-49 were 22.2 percent.

Of the women interviewed in the 2008/9 KDHS, the majority were of parity 7+, which were 43.7 percent and followed by those of parity 4-6 at 36.9 percent, those who were of parity 1-3 were 19.4 percent. In the 2014 KDHS this trend changed and the women of parity 1-3 were found to be of the majority at 59.7 percent, they followed by women of parity 4-6 who were 28.4 percent and the women who reported 7+ parity were the least at 11.8 percent.

The distribution of the respondents by marital status revealed that a majority of the women respondents were currently married, (78 percent), those who had been formerly married were 13.7 percent while the respondents who had never been married were 8.4 percent in the 2008/9 KDHS survey results. In the 2014 KDHS survey the women who reported to be married increased to 82.5 percent, those who reported to be formerly married were 9.7 percent and those who had never been married were 7.8 percent.

A majority of the respondents had primary education and they constituted 54.3 percent of the women interviewed, followed by those with secondary education who were 21.1 percent, those with no education about 17.6 percent while those of higher education were 7.0 percent in the 2008/9 KDHS survey. This trend was maintained in the 2014 KDHS survey where women who reported to have primary education only were still the majority at 52.5 percent, followed by women with secondary education at 21.5 percent, women who reported to have

no education were 18.7 percent, women who reported higher education were the least at 7.4 percent.

In terms of wealth index the results of the 2008/9 KDHS revealed that the majority of the women were in the category of the rich at 45.1 percent, the proportion belonging in the middle wealth index category were 17.3 percent and 37.5 percent of the respondents were poor. In the 2014 survey, majority of the women were in the category of poor at 50.6 percent, the proportion of women belonging in the middle wealth index category were 17.6 and 31.8 percent of the respondents were categorized as belonging in the rich wealth index.

Most of the respondents 71.2 percent were living in the rural areas while 28.8 percent lived in urban areas according to the 2008/9 KDHS survey, in the 2014 KDHS survey, there was a decrease observed in the percentage of women respondents living in the rural areas to 65.5 percent while those who reported to be living the urban areas increased to 34.5 percent.

While in the 2008/9 KDHS survey, 19.5 percent of the respondents were Roman Catholics, a majority of the respondents were of the category of Protestants/other Christians (60.9 percent) while Muslims were only 16.1 percent of the study population, those who were of no religion and or other religions were 3.6 percent. In the 2014 KDHS, women who reported to be Protestants or other Christians were still the majority at 63.4 percent, the Roman Catholics were 19.2 percent, the Muslims were reported to be 14.6 percent and those women of no religion and or other religion were reported to be 2.8 percent.

In terms of the region the respondents were distributed as follows: Nyanza had 16.5 percent of the respondents, Rift Valley had 15.8 percent, Coast had 13.7 percent, Eastern had 13.5 percent of the respondents, Western had 12.3 percent, Central had 11.6 percent of the respondents, Nairobi had 9.4 percent, and North Eastern had the least with 7.1 percent of the respondents in the 2008/9 KDHS. In the 2014 KDHS survey, the women respondents were distributed as follows: Nyanza 13.9 percent, Rift Valley were 31.8 percent, Coast were 12.4 percent, Eastern were 15.4 percent, Western were 9.4 percent, Central were 8.0 percent of the respondents, Nairobi had 2.9 percent while North Eastern were 6.2 percent of the respondents.

Out of the 6201 women respondents, 6.3 percent did not attend antenatal care, 10.3 percent had 1-2 antenatal visits, 18.3 percent had 3 visits and 32.1 had 4+ antenatal visits according to the 2008/9 KDHS survey. In the 2014 KDHS women who reported not to have gone for any antenatal visit 6.2 percent, 13.9 percent reported to have had 1-2 antenatal visits, 25.4 percent reported 3 antenatal visits and 54.1 percent reported to have had 4+ visits.

4.3 Association between independent variables and non-utilization of skilled assistance during delivery

This section presents the association between socio-economic, demographic and use of antenatal health care service (that is number of ANC visits) variables and non-utilization of skilled health assistance during delivery as summarized in Table 4.2. The significance of association between each selected study variable and the dependent variable is tested using the Chi-square test.

Table 4.2: Cross tabulation of variables by non-utilization of skilled health assistance during delivery in Kenya- 2008/9 and 2014 KDHS

Variables	Categories	2008/9 Non-Utilization of skilled assistance (%)	Pearson Chi-Square (x2)	2014 Non-Utilization of skilled assistance (%)	Pearson Chi-Square (x2)
Demographic variables					
Age group	15-24 25-34 35-49	18.6 34.6 46.7	37.6*	25.2 47.4 27.4	165.4*
Number of Children/Parity	1-3 4-6 7+	14.4 34.5 51.2	259.7*	43.3 37.3 19.4	1090.1*
Marital status	Never married Currently married Formerly married	7.8 76.1 16.1	3.6*	5.6 83.8 10.6	63.8*
Socio-economic variables					
Highest educational level	No education Primary Secondary Higher	22.4 55.6 17.3 4.6	586.4*	35.6 54.3 9.2 0.9	2535.5*
Wealth Index	Poor Middle Rich	44.8 17.9 37.3	670.0*	75.5 14.3 10.2	2498.7*
Type of place of residence	Urban Rural	22.6 77.4	392.1*	17.5 82.5	1165.0*
Cultural variables					
Religion	Roman Catholic Protestant/Other Christian Muslim No religion/other	19.3 58.7 17.8 4.2	89.0*	19.2 55.7 20.5 4.6	402.7*
Region	Nairobi Central Coast Eastern Nyanza Rift Valley Western North Eastern	6.9 9.8 13.5 13.8 16.0 17.5 13.8 8.7	402.5*	0.6 1.9 13.4 15.8 9.9 38.7 10.3 9.5	995.2*
Use of antenatal health care					
Antenatal visits	No visits 1-2 visits 3 visits 4+ visits	8.6 9.6 14.9 18.3	42.6*	13.9 18.8 26.5 40.5	1351.9*

Source: Study data P values: *P = 0.001

4.3.1 Demographic factors

As shown in the table age is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 18.6 percent among those aged 15-24 years; 34.6 percent for the 25-34 age group and 46.7 percent for the 35-49 years age group. In 2014 a slightly different pattern is observed with the percentage in the age group 15-24 being 25.2 percent, 47.4 percent in the age group 25-34 and 27.4 percent in the age group 35-49. The Chi-square tests for the two periods show that the association is significant.

From the table parity is seen to be significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 14.4 percent among women with 1-3 children; 34.5 percent among the women with 4-6 children and 51.2 percent for the women with 7+ children. However in 2014, a different pattern is observed with the percentage of women of parity 1-3 being 43.3 percent, 37.3 percent among the women of parity 4-6 and 19.4 percent among women of parity 7+. The Chi-square tests for the two periods show that the association is significant.

As shown in the table marital status is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. Amongst the women who did not utilize skilled assistance during delivery in 2008/09 7.8 percent had never been married, 76.1 percent were married and 16.1 percent were formerly married. In 2014 a similar pattern is observed, with the proportion of women who did not utilize skilled assistance for delivery being 5.6 percent being for women who had never been married; 83.8 percent for the women who were currently married and 10.6 percent for the formerly married women. The Chi-square tests for the two periods show that the association is significant.

4.3.2 Socio-economic factors

As shown in the table education is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 22.4 percent among women with no education; 55.6 percent for the women with primary education; 17.3 percent for the women with secondary education and 4.6 percent for the women with higher level of education.

However in 2014, a slightly different pattern is observed were the percentage of those with no education is 35.6 percent, 54.3 percent among the women with primary education, 9.2 percent for the women with secondary education and 0.9 percent for the women with higher level of education. The Chi-square tests for the two periods show that the association is significant.

Wealth index is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 44.8 percent among the poor; 17.9 percent for the middle wealth index and 37.3 percent for those of rich wealth index. In 2014 a slightly different pattern is observed with the percentage in the poor wealth index being 75.5 percent, 14.3 percent in the middle wealth index and 10.2 percent in the rich wealth index. The Chi-square tests for the two periods show that the association is significant.

Type of place of residence is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 22.6 percent among those in the urban residence and 77.4 percent for the rural residence. In 2014 a slightly different pattern is observed with the percentage in the urban residence being 17.5 percent and 82.5 percent in the rural residence. The Chi-square tests for the two periods show that the association is significant.

4.3.3 Cultural factors

As shown in the table religion is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 19.3 percent were of the Roman Catholics; 58.7 percent were protestant Christians and/or other Christians; 17.8 percent for the Muslim and 4.2 percent for no religion and/or other religion. In 2014 a slightly different pattern is observed with the percentage of the Roman Catholic being 19.2 percent, 55.7 percent for the protestant and/or other Christians; 20.5 percent for the Muslims and 4.6 percent for those of no religion and/or other religion. The Chi-square tests for the two periods show that the association is significant.

Region of residence is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 6.9 percent from Nairobi region; 9.8 percent from Central region; 13.5 percent from Coast region; 13.8 percent from Eastern region; 16.0 percent from Nyanza region; 17.5 percent from the Rift Valley region; 13.8 percent from Western region and 8.7 percent from North Eastern region. In 2014 a slightly different pattern is observed with the percentage from Nairobi being 0.6 percent, 1.9 percent in the Central region, 13.4 percent in the Coast region, 15.8 percent in the Eastern region, 9.9 percent in Nyanza region, 38.7 percent in the Rift Valley region, 10.3 percent in Western region and 9.5 percent in the North Eastern region. The Chi-square tests for the two periods show that the association is significant.

Antenatal care is significantly associated with non-utilization of skilled assistance during delivery in both 2008/09 and 2014. The proportion of women who did not utilize skilled assistance during delivery in 2008/09 was 8.6 percent among those who had no antenatal visits; 9.6 percent for those with 1-2 antenatal visits; 14.9 percent for the women with 3 antenatal visits and 18.3 percent for the women with 4+ antenatal visits. In 2014 a slightly different pattern is observed with the percentage in the women with no visits being 13.9 percent, 18.8 percent with 1-2 antenatal visits, 26.5 percent with 3 antenatal visits and 40.5 percent with 4+ antenatal visits. The Chi-square tests for the two periods show that the association is significant.

4.4 Factors associated with non-utilization of skilled assistance

Table 4.3 presents the logistic regression results for the factors influencing non-utilization of skilled assistance during delivery. Logistic regression has been used to estimate the likelihood of non-utilization of skilled assistance during delivery given a number of selected variables, that is; age group, number of children (parity), highest education level, wealth index, and marital status, type of place of residence, religion, antenatal visits and religion.

Table 4.3 Factors influencing non-utilization of skilled assistance during delivery in Kenya 2008/9 and 2014 KDHS
Source: Study data

Variables	Categories	2008/09				2014			
		Exp(B)	Sig.	95% C.I. for Exp(B)		Exp(B)	Sig.	95% C.I. for Exp(B)	
				Lower	Upper			Lower	Upper
Age group	15-24		.007				.107		
	25-34(1)	.724	.002	.588	.893	1.105	.068	.993	1.229
	35-49(2)	.683	.009	.514	.907	1.164	.048	1.001	1.353
Number of children	1-3		.000				.000		
	4-6 (1)	2.128	.000	1.674	2.705	1.471	.000	1.322	1.636
	7+ (2)	3.197	.000	2.385	4.286	1.683	.000	1.434	1.974
Highest educational level	No education		.000				.000		
	Primary (1)	.553	.000	.417	.733	.385	.000	.339	.438
	Secondary (2)	.243	.000	.174	.339	.196	.000	.167	.231
	Higher (3)	.098	.000	.055	.174	.081	.000	.059	.111
Wealth Index	Poor		.000				.000		
	Middle (1)	.648	.000	.526	.800	.616	.000	.554	.686
	Rich (2)	.447	.000	.361	.553	.328	.000	.291	.371
Marital status	Never married		.032				.091		
	Married (1)	.706	.023	.523	.954	1.033	.694	.878	1.216
	Formerly married (2)	.865	.454	.592	1.264	1.191	.087	.975	1.455
Place of residence	Rural (1)	1.957	.000	1.538	2.490	1.825	.000	1.652	2.016
Religion	Roman Catholic		.554				.448		
	Protestant/Other (1)	1.014	.890	.829	1.241	.969	.555	.871	1.077
	Muslim (2)	1.137	.450	.815	1.588	1.103	.301	.916	1.327
	No religion/other (3)	1.436	.185	.841	2.453	1.070	.609	.826	1.385
Antenatal visits	No visit		.000				.000		
	1-2 visits (1)	.162	.000	.102	.258	.252	.000	.202	.316
	3 visits (2)	.111	.000	.071	.173	.189	.000	.152	.235
	4+ visits (3)	.080	.000	.051	.124	.139	.000	.112	.171
Region	Nairobi		.000				.000		
	Central (1)	.589	.029	.366	.946	.338	.000	.220	.520
	Coast (2)	1.589	.039	1.023	2.467	1.195	.378	.805	1.774
	Eastern (3)	1.132	.592	.720	1.781	1.191	.376	.809	1.754
	Nyanza (4)	1.679	.018	1.092	2.581	.880	.519	.596	1.299
	Rift Valley (5)	2.399	.000	1.551	3.712	1.666	.008	1.140	2.436
	Western (6)	3.317	.000	2.141	5.138	1.801	.003	1.217	2.666
	North Eastern (7)	1.269	.421	.710	2.266	.662	.064	.428	1.025
	Constant	8.547	.000			4.924	.000		
Model fit		-2 Log likelihood = 4207.813 df = 8				-2 Log likelihood = 14741.754 df = 8			

4.4.1 Demographic factors

The results show that from the 2008/9 KDHS results, the odds of non utilization of skilled assistance during delivery were 0.7 and 0.6 times lower for women in the 25-34 and 35-49 age groups respectively. The 2014 KDHS results however showed that the odds of non-utilization of skilled assistance during delivery were higher for women of ages 25-34 and 35-49 as compared with those of women aged 15-24. These results were only significant for 2008/09.

The results show that from the 2008/9 KDHS, the odds of non-utilization of skilled assistance during delivery were 2 times and 3 times higher for women with 4-6 children and 7 plus children respectively. The 2014 KDHS indicated that the odds of non-utilization of skilled assistance during delivery were 1.4 and 1.6 times higher for women with 4-6 and 7+ children respectively. The results were also found to be of statistical significance in both 2008/09 and 2014.

The results show that the odds of non-utilization of skilled assistance during delivery were 0.7 and 0.8 times lower for married women and formerly married women respectively in the year 2008/9. From the 2014 KDHS survey results it was found that the odds of non-utilization of skilled assistance during delivery were 1.09 times higher for married women and 1.19 times higher for women who were formerly married. The factor of marital status of the respondents however, was found to be of no statistical significance in both surveys.

4.4.2 Socio-economic factors

From the table the results show that in 2008/09 the odds of non-utilization of skilled assistance during delivery were 0.5, 0.2 and 0.09 times lower for women with primary, secondary and higher levels of education respectively. The same trend was observed in the 2014 KDHS survey where the odds of non-utilization of skilled assistance during delivery were 0.3, 0.1 and 0.08 times lower for women with primary, secondary and higher levels of education respectively. In both survey periods highest education level was found to be of statistical significance.

From the table above, the results show that the odds of non-utilization of skilled assistance during delivery in 2008/09 were 0.6 and 0.4 times lower for women of middle and rich wealth index respectively. This same trend is observed in 2014 KDHS where the odds of non-utilization of skilled assistance during delivery were 0.6 and 0.3 times lower for women of middle and rich wealth index respectively. The results were significant for both 2008/09 and 2014.

The results on the table in 2008/09 the odds of non-utilization of skilled assistance during delivery were 1.9 times higher for women in the rural areas. This was similar to the trend observed in the 2014 KDHS, where the odds of non-utilization of skilled assistance during delivery were 1.8 times higher for women in the rural areas. Type of place of residence was found to be of statistical significance during both survey periods of 2008/9 and 2014 KDHS.

4.4.3 Cultural factors

The results show that in 2008/9 KDHS, the odds of non-utilization of skilled assistance during delivery were 1.01, 1.13, 1.43 times higher for protestant/other Christian women, Muslim women and women of no religion and/or other religion respectively. From the 2014 KDHS results, the odds of non-utilization were 0.9 times lower for protestant/other Christian women, but 1.1 and 1.07 times higher for Muslim women and women of no and/or other religion respectively. Religion however was found to be of no statistical significance during both survey periods.

From the table, the results of 2008/9 KDHS show that odds of non-utilization of skilled assistance during delivery were 0.5 times lower for women from the Central region; however the odds of non-utilization of skilled assistance during delivery were 1.5, 1.1, 1.6, 2.3, 3.3 and 1.2 times higher for women from the Coast, Eastern, Nyanza, Rift Valley, Western and North Eastern regions respectively. During the 2014 KDHS survey a slightly different pattern was observed where the odds of non-utilization of skilled assistance during delivery were 0.3, 0.8 and 0.6 times lower for women from Central, Nyanza and North Eastern regions respectively but 1.1 times higher for women in both Coast and Eastern regions and 1.6 and 1.8 times higher for women from the Rift Valley and Western regions respectively. In 2008/09 region of residence was found to be of statistical significance for women in all the regions except for Eastern and North Eastern regions. Again in the survey year 2014, region of residence was

found to be statistically significant in all the regions except for the regions of Coast, Eastern, Nyanza and North Eastern.

4.4.4 Use of antenatal health care services

The results show that in the year 2008/9 the odds of non-utilization of skilled assistance during delivery were 0.16, 0.11 and 0.08 times lower for women with 1-2, 3 and 4+ antenatal visits. A similar observation was made in the 2014 where the odds of non-utilization of skilled assistance during delivery were 0.2, 0.18 and 0.13 times lower for women with 1-2, 3 and 4+ antenatal visits. Antenatal visits were found to be of statistical significance in both the 2008/9 and 2014.

4.5 Discussion

Although maternal health care consist of many components, this study looked only into one; that is skilled assistance during delivery. The study examined levels of non-utilization of skilled assistance during delivery, factors associated with non-utilization of skilled assistance during delivery as well as determinants of non-utilization of skilled assistance during delivery in Kenya.

The findings revealed a notable decline in level of non-utilization of skilled assistance during delivery from the year 2008/9 to the year 2014 from the levels of 68 percent to 37.7 percent, a decline of 30.3 percentage points. The results of the cross tabulations also showed that the study variables had significant statistical association with non-utilization of skilled assistance during delivery in Kenya during the two time periods.

In the year 2008/9 the variables of study which were age, parity, marital status, highest level of education, wealth index, type of place of residence, religion, region of residence of the woman and use of antenatal care services were found to be significantly associated with non-utilization of skilled assistance during delivery. In 2014 the same factors of age, parity, marital status, highest level of education, wealth index, type of place of residence, religion, region of residence and use of antenatal care were also found to be significantly associated with non-utilization of skilled assistance during delivery.

The logistic regression results showed that in 2008/09; age, parity, highest level of education, wealth index, type of place of residence and use of antenatal care were all found to be significant to non-utilization of skilled assistance during delivery for the women. Region of residence was found to be a significant factor to non-utilization of skilled assistance during delivery for women in the regions of Nairobi, Central, Coastal, Nyanza, Rift Valley and Western. In 2014, the results show that parity, highest level of education, wealth index, type of place of residence and use of antenatal health care were found to be significant to non-utilization of skilled assistance during delivery for the women. Region of residence was found to be a significant factor for non-utilization of skilled assistance during delivery for women in the regions of Nairobi, Central, Rift Valley and Western regions only.

From the results, the influence of certain variables on non-utilization of skilled assistance during delivery was found to be consistent with the previous studies. These variables include parity of the women; women with higher parity often do not use skilled assistance during delivery as also found by Magadi et. al, (2000a), highest level of education, women with higher than secondary school education level were found to be least likely not to utilize skilled assistance during delivery, this finding is consistent with other studies done by Magadi et.al (2000a) and those of Letamo et. al, (2003), Ochako, et. al, (2011). Wealth index Letamo, 2003; Stanton et. al, (2007). Type of place of residence, this finding is consistent with those of Titaley et. al, 2009 and Magadi et. al, (2000a), and finally the use of antenatal health care which was found to be consistent with the findings of Mwaniki et. al, (2002) Ochako et. al., (2011), Mpembeni et. al, (2007).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study examined the extent to which socio-economic, cultural, demographic and exposure to modern maternal health services influence non-utilization of skilled assistance during delivery among women in Kenya. Use of maternal health services is an effective approach in reducing the risks of maternal morbidity and mortality and ensuring good health for both the baby and the mother. The information is also useful for policy makers for the design of appropriate interventions to help where there is need.

The data used for this analysis was that from the 2008/09 and 2014 Kenya Demographic and Health Surveys carried out by the KNBS in collaboration with other partners. The methods used for analysis were cross-tabulation and logistic regression methods.

5.2 Summary

The study findings indicate that there has been a steady decrease in the level of non-utilization of skilled assistance during delivery in Kenya between the consecutive survey years of 2008/9 and 2014. In 2008/9 two thirds of the women in Kenya did not utilize skilled assistance during delivery, this proportion decreased to one third in 2014 not utilizing skilled assistance during delivery in Kenya. The cross tabulation analysis results showed that in 2008/09 maternal age, parity of the woman, highest educational level, wealth index, marital status, and type of place of residence, religion of the woman, use of antenatal care and region of residency of the woman were all significantly associated with non-utilization of skilled assistance during delivery. Women with more children were more likely not to utilize skilled assistance during delivery.

Increase in the mother's education is associated with lower non-utilization of skilled assistance during delivery and this impact increased in 2014. Wealth index was also found to be significant determinant of non-utilization of skilled assistance during delivery. Non use of skilled assistance was found to be lower among women of higher wealth index. Women in rural areas were more likely not to use skilled assistance compared to those in urban areas.

Antenatal care was also found to be a significant determinant for non-utilization of skilled assistance during delivery. Women who went for the antenatal care were less likely not to utilize skilled assistance during delivery and this increased with the number of visits made by the woman. Region of residence was also found to be a determinant for non-utilization of skilled assistance during delivery. In Nairobi and Central women were less likely not to utilize skilled assistance during delivery as compared to other regions. In other regions influence of rural type of residence is seen on non-utilization of skilled assistance during delivery, culture and traditions of the population in these different regions also is a factor in the levels of non-utilization of skilled assistance during delivery.

5.3 Conclusion

The major conclusion from the study findings was that although maternal health care services are available, utilization of these services for delivery care are still low. There has been a noted decrease in non-utilization of skilled assistance during delivery between the years 2008/9 and 2014, more effort is required to see further improvement so that the one third of the women delivering without skilled assistance can be reached and hence further lower the level of non-utilization of skilled assistance during delivery.

The other key conclusion is that non utilization of skilled services is influenced by age, parity, marital status, highest level of education, wealth index, type of place of residence, religion, region of residence and use of antenatal care by the women. These factors have not changed over time.

5.4 Recommendation

5.4.1 Recommendation for policy

The study findings shows a decrease in non-utilization of skilled assistance during delivery, concerted efforts by all stakeholders can realize even further reduction in levels of non-utilization of skilled assistance during delivery and hence upscale use of maternal health services effectively. More attention should be focused on relevant policy measures aimed at changing the social structures that deter women from utilization of skilled assistance during delivery and hence create and strengthen conditions that will encourage the women to use skilled assistance during delivery. This will translate to social economic growth as envisaged in the policy for sustainable development.

Decrease in non-utilization of skilled assistance during delivery in rural areas can be achieved by deliberate improvement on access to health care by addressing the long distances to health facilities and the difficult terrain in much of the regions which are predominantly rural. The quality of services offered by the facilities in the different regions needs to be improved and specifically target the needs as per the regions. Policies that sustain certain and even improve on the noted gains in regions like Central, Nairobi and Nyanza should be implemented and small gains noted in the Coast and Western regions should be encouraged. Regions experiencing drawbacks needs to be looked into specifically and targeted for lowering non-utilization.

Education and wealth index were found to be very significant in determining non-utilization of skilled assistance during delivery, so there is need to further improve education level for the women as well as financial ability of the women. This will give the women the ability to make decision and implement when it comes to use of skilled assistance during delivery.

Use of antenatal care was also found to be a significant determinant for non-utilization of skilled assistance during delivery. Women already using a form of maternal health service need to be retained in the system to deliver under skilled care; and therefore the stakeholders needs to address reasons for the loss of women already going for ANC but choosing to deliver under unskilled care.

5.4.2 Recommendation for research

There is need to investigate the noted increase in the proportion of women not utilizing skilled assistance during delivery among younger women particularly from age 25 to 34 year as well as the younger ones, as it is established knowledge that younger women are more likely to utilize skilled assistance during delivery yet a decline in proportion utilizing skilled assistance during delivery was noted amongst the younger women.

A qualitative study would as well be important in helping understand the noted phenomenon of increase in the proportion of women who are not utilizing skilled assistance during delivery and yet are attending antenatal care.

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