CHOICE OF MATERNAL CARE PROVIDER IN KENYA

BY

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DECLARATION

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

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This research paper has been submitted for examination with our approval as University supervisors.

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DEDICATION

I dedicate this paper to my Late father David Ogega Obai. You did not have much, but you gave me your all. I am certain that you would have been very proud of me if you were here. You were the best that I could have had.

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ABSTRACT

A study investigating a combination of both socio-economic and women decision making variables and their relationship with maternal care services in Kenya brings a different front in attempting to establish the cause of poor use of maternal care services and recommend policies that will reduce maternal mortality in Kenya. We fitted a multinomial logit model to analyze how socio economic such as women's education level, husband's education level, mother's age at first birth, age category, residence, religion, work status and income levels and women autonomy variables (final say on woman's own healthcare, large household purchases, daily household purchases, family visits and control of finances) influence the preferred place of delivery for women. We used data obtained from the Kenya Demographic and Health Survey 2008/09.

Among the socio-economic variables analyzed, both husband's and women's education level was found to be a significant contributor to use of health facilities for delivery, similar to being rich and living in urban areas, whereas living in rural areas and higher parity reduce the probability of seeking maternal care services in health facilities. The study concluded that decision making empowerment for women of reproductive age will be necessary if maternal mortality rate is to be reduced, especially decision making on purchase of large household items and use of family financial resources.

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LIST OF ABBREVIATIONS

UN	United Nations
WHO	World Health Organization
UNFPA	United Nations Population Fund
KDHS	Kenya Demographic and Health survey
MMR	Maternal Mortality Rate
TFR	Total Fertility Rate
ANC	Antenatal Clinic
ICPD	International Conference on Population and Development
MDGs	Millennium Development Goals
NRHS	National Reproduction Health Survey
SMI	Safe Motherhood Initiative
MTP	Medium Term Plan
WMS	Welfare Monitoring Survey
NASSEP	National Sample Survey and Evaluation Programme
DHS	Demographic and Health Survey

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Over time, negative health outcomes have become synonymous with child birth in many poor countries of Sub-Saharan Africa. In developed countries, advancement in primary healthcare services such as maternal healthcare has made many women of reproductive age to perceive childbirth as a joyous experience, filled with great anticipation for positive outcomes of a healthy mother and child at the end of a successful pregnancy. On the contrary, as much as most women in the reproductive age in less developed countries look forward to a positive outcome, negative anticipation of sickness, poor health and in many cases death cannot be overlooked (Kistiana, 2009). This is largely because maternal health as a measure of reproductive health care is still way below standard in many less developed countries, more so in Sub-Saharan Africa (Magadi, Msiyaphazi, & Brockerhoff, 2003).

In many developing countries, death of most women of reproductive age has been linked to pregnancy related complications and childbirth (WHO, 2012). These complications result from conditions like high blood pressure, infections that are caused by unsafe abortion and unhygienic environment as well as unprofessional practices by unqualified staff during delivery (Ayivor, 2004). It is reported that 800 women die daily from such complications, with Sub-Saharan Africa recording more than half of these deaths (UNFPA, 2012). In Kenya, Maternal mortality rate has recently risen compared to the past, from 365/100,000 in 1990-1994 to 488/ 100,000 in 2008 (KDHS, various years).

WHO defines Maternal death as *the death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration and size of pregnancy from any cause related to or aggravated by pregnancy or its management but not from accidental causes Maternal deaths are further divided into direct obstetric deaths which are caused by complications of pregnancy and indirect deaths caused by pre-existing diseases worsened by physiological effects of pregnancy* (WHO, 1989).

Among the many indicators that are used to measure development, maternal mortality ratio (MR) and birth attendance by skilled health professional feature among other indicators like infant and child mortality and child immunization. WHO defines maternal mortality ratio as *maternal deaths per 100 000 live births*, with skilled health professional being regarded as either a doctor, nurse or midwife. Jayaraman, Chandrasekhar & Gabreselassie (2008) noted that challenges with obtaining correct data make determining MMR very difficult, hence many studies resort to use of proxies such as antenatal care, delivery care and post natal care to estimate MMR.

This study will seek to establish the factors that influence the choice of maternal care provider during delivery using Multinomial logit model, and further analyze the factors that determine the choice of maternal care provider in Kenya using the 2008/2009 Kenya Demographic and health survey (KDHS) data.

The indicators of health status in Kenya have shown some improvement in health service delivery. Infant and under five mortality rates have significantly reduced, while maternal mortality remains still high. In the year ending 2010, MMR was 488/100 000. Births attended by skilled attendants remained low at 43percent over the same period, a slight improvement from the figures posted by the 2003 KDHS of 42 percent (Republic of Kenya, 2011). Uptake of use of maternal healthcare services is still low, more so assistance during childbirth. This continues despite the well acknowledged fact that skilled attendance at birth increases chances of a positive birth outcome of a healthy mother and child. Many deliveries continue to take place at home relative to health facilities, where traditional birth attendants play a key role in aiding delivery, as well as relatives and friends, or woman delivering unaided (KDHS, 2009). In women of reproductive age, especially younger women, pregnancy related deaths account for the largest proportion of death and disability. Other factors like poverty, long distances to nearest health facility and supply side conditions like poor health infrastructure and inadequately trained personnel at the health facilities have been attributed to increasing maternal mortality levels (Republic of Kenya, 2009).

Total fertility rates (TFR) remain high though there has been a significant reduction over the years. Since 1989 when the first KDHS was conducted fertility rate has progressively reduced from an average of 6.1 in 1984 -1988 to 4.6 according to the

most recent KDHS 2008/2009. In rural areas fertility rate is twice as high as urban areas for women aged 20-24 who recorded the highest fertility rate among all women in the reproductive age. Older women (aged 40-49) and those aged 15-19 recorded lowest fertility rates. The fall in TFR is attributed to improved uptake of contraceptive use. Overall, use of contraception by women in all age categories has improved from 7percent in 1978 to 46 percent in 2009 (Republic of Kenya, 2009; KDHS, 2009). Use of contraception helps women space the timing between pregnancies or prevent pregnancies altogether when they do not wish to give birth to more children, hence reducing exposure to life threatening situations that result from dangerous pregnancies (Kistiana, 2009).

Unwanted pregnancies result from non use of contraceptives. In many instances unwanted pregnancies are the driving force behind most unsafe abortions that lead to death in many women. Unsafe abortions cause between 30-50 percent of all maternal deaths, with 48 percent of abortion cases reported among women aged 14-24 years. The high abortion rates are attributed to the fact that abortion is illegal in Kenya, unless the life of the mother is under threat. This pushes many women with unwanted pregnancies seek sources of care in providers who expose them to great danger. Statistics show that about 300000 pregnancies are terminated annually, 20 000 of which get admissions in health facilities due to pregnancy-related complications (Republic of Kenya, 2009). This therefore means that over 200 000 abortion cases occur in areas other than hospitals, attended by unqualified attendants. This problem can be addressed if the existing unmet need for family planning can be addressed. Unmet need for family planning is defined as the gap that exists when women of reproductive age do not want more children or wish to delay childbirth by at least two years, yet don't use any birth control method. In Kenya, women aged 20-24 have the greatest need for unmet family planning as they are sexually active and still wish to space births by at least two years (Republic of Kenya, 2009; Kistiana, 2009).

Over time, there have been many sources of maternal care service providers, ranging from health institutions to home care. Kenya's health care system is organized such that public health institutions are categorized according to the level of advancement in terms of infrastructural capacity, human resource and the complexity of health conditions and diseases that can be handled. The facilities range from national

referral hospital (Kenyatta National Hospital) to numerous health centers and dispensaries. The system also recognizes the existence of community health workers who work in a given community. Private institutions range from well established hospitals to clinics and mission hospitals. Other providers of maternal care services include traditional birth attendants, relatives/ friends, and self. In health institutions, delivery care is usually assisted by professionals while home care is provided by traditional birth attendants, relatives/ friends or by the woman herself. According to KDHS 2008/2009 92 percent of women seek antenatal care services (ANC) from a medical professional, but about 56 percent of all women who delivered five years before the survey were unaided by skilled medical personnel. The implication that over 40 percent of women who sought antenatal care in health facilities did not deliver in health facilities is discouraging.

Women's ability to access and utilize effectively primary healthcare services is dependent on their ability to take part in family decision making processes especially on matters that concern their health and how family resources are used. Research conducted in various developing countries show that involvement in decision making and having final say on use of family financial resources promotes utilization of maternal healthcare services, and if encouraged could help reduce maternal mortality (Ngom, Debpuur, Akweonga, Adongo, & Binka, 2003). The role played by women in determining their own health care needs and those of their family members especially children cannot be overlooked.

1.1.1 Policy Framework

Worldwide concern was aroused when the safe motherhood initiative (SMI) was launched in 1987, during a conference held in Nairobi. The intention of this early conference was to raise awareness about increasing maternal deaths in the world. This was later advanced by the Cairo international conference on population and development (ICPD) in 1994. In this convention, Kenya attended together with other 178 countries where they agreed on four qualitative and quantitative goals. Key among the issues discussed was the reduction of maternal mortality by significantly by 2015 and to reduce the differences between countries (Safe motherhood: 20 years and counting, 2006).

These two conventions paved way to the millennium development summit in 2000, which led to the signing of the millennium declaration. The millennium declaration outlined eight millennium development goals (MDGs) of which maternal mortality earned a slot in number five. In Kenya, MDGs implementation process started in September 2002 after a national stakeholder forum was held, aiming at building consensus and promotion of understanding on the significance of MDGs, their links to national planning frameworks and to determine country level reporting (Republic of Kenya, 2010).

After Kenya got its independence in 1963, economic and social policies were outlined in session paper no.10 of 1965. The policies laid down strategies targeting poverty alleviation, fighting disease and ignorance. This has since been succeeded by various national development plans, poverty reductions strategy papers and the economic strategy of 2003-2007. These aimed at reducing poverty levels, creating employment and improvement of the general well being of Kenyans. Currently the development blueprint in use is the Kenya Vision 2030, which is implemented in form of medium term plans of five year period.

The birth of the Kenya Health policy framework (1994) led to the launch of the National Reproductive Health Survey (NRHS) Delivery strategy of 1997-2010. The two were based on pillars similar to those of the Safe Motherhood Initiative (SMI) which were to include family planning, antenatal care, clean and safe delivery, essential obstetric care, post partum care, new born care and post abortion care. Other medium term plans include the National health sector plan I (1999-2004); national Health sector plan II (2005-2010); the first Medium Term Plan (MTP) (2008-2012) and the vision 2030 health sector plan (2008-2012). In the medium term, the focus is to promote holistic provision of healthcare to the population. It is envisioned that the scaling up of community based care, expanding the role of community health workers and reducing geographical and financial barriers to accessing health care will help achieve this (Republic of Kenya, 2011).

1.2 Problem Statement

It is widely acknowledged that deliveries in health facilities with the aid of a health professional increases chances of survival for both the mother and newborn, while deliveries conducted at home with no assistance lead to high maternal and newborn deaths (Bhatia & Cleland, 1995; Ethiopian society of social studies, 2005). Latest statistics indicate that many women of reproductive age in Kenya continue to deliver without assistance or at home compared to deliveries attended in health facilities (Republic of Kenya, 2011). The continued annual increase in the proportion of women who deliver at home and subsequently die due to pregnancy related complications is cause for concern not only in Kenya but in the world.

Studies conducted previously on factors that determine utilization of maternal healthcare, have focused on demographic and socio-economic characteristics only, with few of these focusing on the individual characteristics of the consumers of maternal health care (women). In Kenya, fewer investigating the correlation between women autonomy and how it affects their choice for delivery service provider especially in Kenya. While demographic and economic factors play a major role in influencing health seeking behavior of consumers of maternal healthcare, it is known that individual women's social context such as family organization and role distribution is crucial in decision making on the utilization of maternal healthcare services (Kistiana, 2009).

The choice of the preferred provider of maternal health care services is a result of social interactions between the consumers of maternal care services (mothers) and family, relatives and friends. Such social interactions when practiced over time they become culture of a society, upon which decisions are made. During delivery decision making on the preferred place of delivery plays a key role in determining the outcome of a delivery, which is a live birth and a healthy mother. In determining the delivery care giver of choice, cultural aspects such as decision making on where delivery care will be obtained from and who makes the decision play a significant role in influencing the choices of the preferred place of delivery. This study therefore seeks to fill this knowledge gap by examining the factors that determine and influence the choice of maternal care provider in Kenya.

1.3 Justification of the Study

The choice of provider of maternal health care services is a result of social interactions between the consumers of maternal care services (mothers) and family, relatives and friends. Such social interactions when practiced over time they become culture of a society, upon which decisions are made. Individual's social context such as family organization and role distribution play a critical role in decisions on the utilization of maternal healthcare services (Kistiana, 2009).

The continued increase in the proportion of women who deliver at home and subsequently die due to pregnancy related complications each year is cause for concern not only in Kenya but in the world. Many researchers have investigated this area yet very few have focused on the individual characteristics of the consumers of maternal health care (women) with even fewer investigating the correlation between women autonomy and how it affects the women's choice for delivery service provider especially in Kenya. Therefore studies tackling such concerns will be crucial in establishing useful insight in reducing the underlying causes of maternal deaths in Kenya, since non-use of maternal health care service endangers the lives of pregnant women.

It is therefore hoped that this study will contribute in improving policymaker's understanding on the factors that affect the choices of place of delivery and help them make relevant and timely policy interventions. It will also add to the existing literature on the determinants of maternal healthcare utilization in Kenya and the world at large.

1.4 Objectives of the Study

The broad objective of this study is to determine the factors that inform the choice of place of delivery by mothers in Kenya. The specific objectives include:

i. Explore the factors that influence the choice of maternal care provider in Kenya
ii. Analyze the factors that determine the choice of maternal care provider in Kenya
iii. Make relevant policy recommendations based on study findings

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter aims at reviewing both the theoretical and empirical literature on maternal healthcare services. The first section outlines the theoretical literature related to maternal healthcare utilization, while the next section looks at the empirical literature in studies carried out both international arena and within Kenya. The last section gives an overview of the literature reviewed.

2.2 Theoretical Literature Review

Studies of consumer demand for healthcare are usually based on consumer demand theory. Here individual consumer's demand is deemed as his/her need or want for a commodity and their willingness and ability to buy that commodity. The consumer model assumes that a consumer's possible choices can be ordered in terms of preference and that the consumer only chooses options that best satisfy her needs. However the consumer is constrained by a budget line which is the level of income and the costs that are related to the respective goods and services as well as the cost of complimentary and substitute commodities. Furthermore, income of a household at any given time will be distributed between investment in health and expenditure on other consumer goods and services, such that as more income is spent in investment for health, less income will be allocated to consumption of other consumer goods.

Andersen behavioral model enlists environment and population characteristics as having the ability to influence individual's healthcare behavior and health outcomes. Existing national health policy, resources, organization, physical infrastructure political and economic structures constitute the environmental characteristics, while predisposing characteristics, enabling resources and need constitute population characteristics. According to this model, factors surrounding an individual before the need for need arose are important determinants of healthcare seeking behavior. Social structures like family type, demographic factors and a society's associated health beliefs play a significant role. Availability of resources such as health insurance, means of transport, and time availability will determine use or non use of health services. a person's need for healthcare services will therefore be determined by an

evaluation of a person's health status either by themselves or medical personnel (Kistiana, 2009).

According to Grossman (1972), demand for medical care is derived from demand for basic health which comes by as a result of the urge to feel better about own health status and to increase individual output in terms of productivity. The Grossman model of demand for good health viewed health as both a consumer as well as an investment good. He purported that everyone has a certain level of health stock that is inherited at the time of birth, on which improvement is carried out as the health stock depreciates with increase in age. Consequently, future health status of an individual is subject to the accumulated health stock over time. Demand for good health is therefore a resultant of an interaction between the cost of obtaining good health (health capital) and the rate of depreciation of health stock. This demand can be viewed as an investment that improves future productivity, meaning that consumers perceive that resources used to improve current health status will be regained or even exceeded by improved productivity in the future.

Health production theory is derived from the production theory. The production theory postulates that different inputs can be combined in varied proportions to yield desired outputs. In maternal care scenario, Arisa (2012) postulated that in health production function, maternal health care is an input whose output is maternal health. This output is measured by the maternal health outcomes such as live births, mortality and morbidity, while inputs include the education level of women, distance to the nearest health facility, and number of trained health personnel and the extent of government investment in terms of expenditure on institutional infrastructure.

2.2 Empirical Literature

2.2.1 Studies outside Kenya

Over time, great interest has been aroused towards reproductions health studies, and especially women reproductive health. Studies on high mortality rate among women of reproductive age have been carried out all over in the world and especially in Least Developed Countries. This is because most maternal deaths are reported in these countries.

There seems to be a general agreement that maternal education plays an important role in determination of utilization of all forms of maternal healthcare services. Maternal mortality and morbidity significantly reduces when women have higher education levels (Obermeyer & Potter, 1991; Bhatia & Cleland, 1995; Ethiopia society of population studies 2005; Jayaraman et al., 2008; Kistiana, 2009). For instance, Bhatia & Cleland (1995) determined that in Karnataka India, personal hygiene and education strongly reinforced us of antenatal and delivery care from health facilities. Women with higher education levels were found to more capable in identifying illnesses and consequently choosing modern treatment from the existing maternal healthcare services around them. In South Africa, women with secondary education or more were found to be more likely to seek the assistance of a doctor during delivery than their counterparts with educational level of below secondary school (Phillips, 2002). In Nigeria, adolescent girls with more years of schooling had a reduced probability of giving birth by more than half (Okonta, 2007), hence reduced mortality and morbidity of that category of women as a result of maternal health-related complications.

Education level of husband and its influence on utilization of maternal healthcare services was found to be giving contradicting effects. For instance in Indonesia, Kistiana (2009) found that husband's and women's education are the greatest predictors of maternal healthcare utilization while in Rwanda, Jayaraman et al., (2008) concluded that greater number of deliveries were likely to be conducted in health facility and at home with professional assistance when overall education levels in the community where high. In Uganda, Lawson (2004) concluded that increased years of schooling for both men and women shifted demand for healthcare from government to private institutions due to perceived superiority of private institutions in providing quality services.

Women exist in a society where everyday life is guided by tradition and culture that define their associations. These social networks in a woman's life influence her decisions about where to seek maternal healthcare by either assisting to identify the providers, locating the providers or by offering material and financial assistance (Okofar & Rizzuto 1994; Ngom et al., 2003; Bloom et al., 2001). For instance in India, Bloom et al.,(2001) established that living with mother- in-law was common

among young married women, and in such settings mother-in-laws were major stakeholders in deciding where maternity care was to be sought. In Nigeria, community perceptions, attitudes and beliefs were found to pose major constraints for women in seeking maternal healthcare services, with men being the key decision makers as to where prenatal and delivery care is to be sought(Okafor & Rizzuto, 1994). Apart from decision making, Guatemalan husbands were found to play key roles in maternal healthcare utilization by providing financial, emotional and social support to women during prenatal, delivery and postnatal periods. Husbands provided pregnancy advice on which provider's services were to be sought based on the information obtained from relatives and friends, accompanying their wives to care provider during prenatal and delivery times and provided needed items to midwifes during home deliveries (Carter, 2002).

When women are able to make their own decisions regarding their own personal life or in their families irrespective of whether other people and especially men support them or not, they are considered to be autonomous (Balk, 1994). In several studies (Bhatia & Cleland 1995; Bloom et al., 2001; Ngom et al., 2003; Ethiopia society of population studies, 2005; Kistiana, 2009), women autonomy was characterized women's ability to make and execute independent decisions on visits to maternal family and friends and control over family resources.

Studies on influence of women autonomy on maternal healthcare utilization have yielded contradictory results. In India, studies by Bloom et al., (2001) concluded that women with higher freedom of movement were better placed to utilize more maternal healthcare services compared to their counterparts whose movement was accompanied by either the mother in-law or some other member of the family. In Northern Ghana where the gate-keeping system is practiced, restricted women's mobility by compound heads and husbands was found to be a major cause of delays in health care seeking, barring utilization of better and modern health facilities especially by children and women (Ngom et al., 2003).

In Sub-Saharan Africa, Latin America and South Asia, women decision making power had significant effects on child immunization. Kistiana (2009) observed that in Indonesia, decision making power in the household concerning large household

expenditures and daily household expenditures had minimal effect on utilization of maternal healthcare services, a scenario similar to earlier findings of Bhatia & Cleland (1995) in India. In Ethiopia, women with low autonomy were 21percent less likely to deliver in health institutions compared to their counterparts in middle autonomy cluster (Ethiopian society of population studies, 2005). Further, Bloom et al., (2001) found that older women who do not live with their mothers-in-law are more autonomous compared to younger women who lived in large families with older women.

Women's dependence on their husband's for financial support hindered them from making autonomous decisions, and as such, women's control over money was seen as boost to improved patterns of maternal healthcare seeking behavior (Okafor & Rizzuto 1994; Ngom et al., 2003; Lawson, 2004). Carter (2002) concluded that male involvement in seeking maternal healthcare services for married women was preferred in Guatemala than absolute female autonomy.

Recent studies indicate that maternal age at delivery has powerful predictions regarding maternal healthcare utilization. Advancement in maternal age was found to have strong positive influence on the utilization of maternal healthcare and its outcomes in India, Bangladesh and Indonesia, while in African countries no significant age differences was found to affect usage of skilled antenatal or delivery care (Reynolds, Wong & Tucker, 2006). According to Okonta (2007), in the Niger Delta region of Nigeria, younger women had a higher likelihood to seek delivery and postnatal care while in Indonesia, women in age bracket 20-39 had the highest likelihood to utilize most maternal health care services than those in lower(15-19) or higher(40-49) age brackets (Kistiana, 2009; Ethiopian society of population studies 2005) . In Uganda, females were found to seek more healthcare during the peak of their childbearing years than earlier or later years (Lawson, 2004). Earlier studies by Obermeyer & Porter (1991) showed no significant influence on maternal healthcare utilization as a result of maternal age.

Studies generally agree that area of residence for women determine utilization patterns of maternal healthcare services. In South Africa, women in rural areas revealed strong negative association with doctor- assisted delivery (Phillips, 2002) yet

in Indonesia more than half of women in rural areas delivered at home (Kistiana, 2009). While rural residence reduces chances of utilization of maternal healthcare services (Obermeyer & Porter, 1991; Ethiopia society of population studies 2005; Jayaraman et al., 2008; Kistiana, 2009), the urban poor utilize maternal healthcare services as poorly as women in rural areas with higher unplanned births and late initiation of prenatal care (Magadi et al., 2003). This is blamed on poverty which reduces the possibility of seeking these services for both women in rural areas and the urban poor.

Women who have had positive outcome in previous pregnancies were found to disregard use of health facilities for maternal care services compared to first time mothers. For most first time pregnancies, women were found to have a higher chance of seeking antenatal and delivery care from health facilities compared to women who had subsequent pregnancy following a successful delivery experience. Delivery through caesarean section and having a still born in previous pregnancies was found to motivate most women to seek maternal healthcare services from health facilities (Obermeyer & Potter, 1991; Bhatia & Cleland, 1995; Kowaleski, Mujinja & Jahn, 2002; Ethiopian society of social studies, 2005; Jayaraman et al., 2008; Kistiana, 2009).

Lawson (2004) concluded that in Uganda, higher household income levels increase women's demand for healthcare in government facilities, while poverty hindered seeking maternal healthcare services in health facilities. Obermeyer & Potter (1991), Magadi et al., (2003) and Ethiopia society of population studies, (2005) commonly agreed that being in a higher wealth quintiles has a positive association with utilization of maternal healthcare services, while on the contrary Bhatia & Cleland (1995) found that maternal economic status had no statistical significance in influencing maternal healthcare seeking behavior in India.

In other findings, religious affiliations that a woman belonged to affected maternal healthcare seeking behavior, especially antenatal care services. In India, Bhatia & Cleland (1995) discovered that non-Hindu women sought antenatal care more than their Hindu counterparts, while in Ethiopia, similar findings were obtained where orthodox women sought care more than Muslims and Protestants women (Ethiopia society of population studies, 2005).

Several data sources were used to conduct the above studies. Demographic and health survey (DHS) data was widely used (Kistiana, 2009; Jayaraman et al., 2008; Ethiopian society of population study, 2005; Lawson, 2004; Reinolds et al., 2006 and Magadi et al., 2003), similar to primary data sources employed by Bhatia & Cleland (1995); Bloom et al., (2001); Kowalewski et al., (2002); Carter (2002); Okafor & Rizzuto, (1994); Ngom et al., (2003). Other studies used independent sources of data distinct from DHS and primary data sources (Obermeyer & Potter, 1991; Powell-Jackson & Hoque, 2011).

2.2.2 Studies in Kenya

Studies carried out in Kenya to investigate the health care seeking behavior of patients reveal that the decision on health caregiver of choice by patients is influenced by various factors. Earlier studies by Njaramba (1994) on the demand for maternal health services (antenatal care) in Thika division of Kiambu district showed that distance travelled to the nearest facility, cost of health services and higher birth order reduced demand for antenatal care. While having a medical insurance cover and perceived better quality service at the antenatal clinics increased use antenatal services. Also, women who had higher maternal education and higher income levels sought antenatal care more compared to those with low education and income levels. Employment status of Women affected utilization of antenatal care with women on permanent employment utilizing antenatal services more than casual employees and housewives. Further, married women were found to visit clinics more times than unmarried women, as well as older women and those who hailed from large families. The study used primary data collected from randomly selected sample of 128 women using two stages random sampling technique.

Awiti (2002), while conducting his study in Vihiga district on the effect of personal and social economic characteristics of a patient that were crucial in the choice of health care facility type from which treatment was sought, collected data from 256 patients from various facilities (hospital, Clinic, dispensary and health centre) . The data was analyzed using multinomial logit model and established that younger patients, being male, being married and having low education attainment had positive influence on patient's seeking treatment from dispensaries and health centers, while older, unmarried, highly educated and female patients sought treatment

from hospitals and clinics. Generally, patients were found to be more likely to visit a health centre than any other facility when ill.

A study by Muligwa (2002) in Vihiga district analyzed the factors that influence the demand for health care services in Kenya. Using a combination of discrete and continuous regression analyses models, he analyzed raw data obtained from the third welfare monitoring survey (WMS III) largely drawn from National Sample Survey and evaluation Programme (NASSEP) framework developed from the 1989 population census. Using household characteristics, type of sickness and the quality of the services as key variables, and the alternatives taken by sick people being to either visit public, private facility or to seek no-care, he found that prices charged for health care, distance to the facilities, education levels of household head and the quality of the services are the main determinants of demand for healthcare in public facilities. Use of private facilities was driven by prices charged at the facility, quality of service offered, education level of household head, and income of the household. The persistence and severity of the sickness (as measured by the number of days a person missed work due to illness) and prices determine the number of visits to the health facilities.

Chepkoech (2003) investigated determinants of utilization of antenatal and delivery care services in four divisions of Nairobi province. Focus was on the importance of the factors that seemed to influence choice and utilization of antenatal and delivery care services. Analysis of Primary data from sampled women in the area was by binary logit model to and multinomial model for choice of place of delivery. A woman was deemed to have either delivered in a public hospital, private hospital or mission hospital. The findings indicated that employed women utilized maternal health care services more than their unemployed counterparts while mother's education level positively affected utilization of maternal health care services in Nairobi slums. Woman's income level had no effect on utilization of maternal healthcare services except in the long run, but husband's income influenced use of antenatal and delivery care. Married women sought less maternal health care services compared to their unmarried counterparts, while family size and age of the woman did not influence the utilization of maternal healthcare services. The cost of services was

found to be negatively correlated with utilization level of maternal health care services.

More recently, Machio (2008) used KDHS 2003 to investigate the factors that influence use of various maternal health care services in Kenya. The study focused on three maternal health care services namely postnatal care, delivery care and antenatal care and was modeled and estimated using five equations namely use of antenatal services, postnatal services, skilled delivery care, number of antenatal visits as well as timing of antenatal visits. Using probit models, Poisson regression count model and multinomial logit model to study the determinants of use of skilled delivery care, antenatal and postnatal care, number of antenatal visits and timing of antenatal visits respectively, she found out that education level of the mother, household wealth index, education level of the husband, place of residence, marital status and age of the woman influenced the use of both antenatal care services and skilled delivery care while working status of the woman, birth order and region only affected use of antenatal care and household size whereas religion only affected use of Skilled delivery care. Higher educational level and women's working status positively influenced use of postnatal care services. Age of the mother, being divorced, living in rural areas, and living in Coast, Western and North eastern province negatively influenced use of skilled delivery care.

The above studies reveal that the decision on where healthcare is sought by patients is influenced by various factors. Most studies tend to agree with international study findings on the role of education in influencing the healthcare seeking behavior of a patient. Studies by Muligwa (2002), Awiti (2002), Njaramba (1994), Chepkoech (2003) and Machio (2008) showed strong positive relationship between the education levels and healthcare utilization. Muligwa (2002) found that education levels of household head plays a key role in determining whether healthcare is sought in a public or private health facility while Awiti (2002) determined that highest education level of a patient will influence the choice of a health facility in which health care is sought.

There exists a strong correlation between a woman's education level and the utilization of maternal healthcare services. Higher maternal education level triggered utilization of antenatal care while skilled delivery care was found to be influenced by both the education level of a woman and that of her husband for married women (Njaramba, 1994; Chepkoech, 2003; Machio, 2008). Women with secondary level of education utilized maternal healthcare services considerably more than their counterparts with only primary level education and no educations.

Marital status, birth order and age yielded mixed results from various studies regarding utilization of maternal healthcare. Married women were found to utilize healthcare services more than their unmarried or divorced counterparts, while the age of the patient reduced the number of visits made to the health facility (Njaramba, 1994; Awiti, 2002; Machio 2008). Previous birth experience as measured by the number of children previously born (birth order) had negative influence on utilization of healthcare services (Njaramba 1994; Machio, 2008).On the other hand, Chepkoech (2003) contradicted the results obtained by both Njaramba (1994) and Machio (2008) when she concluded that family size and age of the woman had no influence on utilization of maternal healthcare services while married women were less likely to use maternal health care services.

Distance covered to the nearest health facility play a critical role in influencing the decision on whether to utilize the kind of healthcare being sought or not. The further a facility was situated from health seekers, the less likely it was to be preferred for utilization. The distance to nearest facility was found to be especially important in the determination of utilization in the public facilities more than in the private facilities (Muligwa, 2002).

With exception to Machio (2008) who used the 2003 Kenya Demographic and Health survey data to conduct countrywide study, all other studies reviewed here used primary data collected from case study areas. Multinomial logit models were widely used for estimation purposes (Awiti, 2002; Chepkoech, 2003; Machio, 2008) with discrete and continuous regression analyses models(Mulwiga, 2002) as well as probit models, poisson regression and count models (Machio, 2008) and binary logit model (Chepkoech, 2003) also having been employed.

2.3 Overview of Literature

From the above reviewed work, there emerge areas of agreement and disagreement in findings of various research works, both locally and internationally. Most international studies that evaluated the relationship between various socio-economic/demographic factors and their influence on the utilization of maternal healthcare services agreed that higher education levels of women, urban residence, higher women autonomy (especially freedom of movement), working status of women as well as household income levels positively affect utilization of maternal healthcare services (Kistiana, 2009; Lawson, 2004; Ethiopian society of social studies, 2005; Jayaraman, et al., 2008; Bloom et al., 2001; Bhatia & Cleland, 1995) . Residing in rural areas and women who have higher birth order had negative relationship, similar to the distance travelled to nearest health facility. The scenario is generally the same for studies conducted in Kenya.

Studies on women's autonomy and its relationship with maternal healthcare services have been conducted outside Kenya, with none having been done locally. Since women's autonomy affects utilization of maternal health care services in other countries (Ngom et al., 2003 ; Kistiana, 2009; Bloom et al., 2001) we found it important to investigate its influence on the mother's choice of the preferred service provider of maternal healthcare services.

Most studies used Demographic and Health Survey (DHS) data of various developing countries where such data existed and primary data collected in various respective study areas where research area did not cover the whole country. This study also utilized the KDHS 2008/09 data consistent with other studies. Demand for health care services was regarded as discrete choice and as such, most studies used multivariate estimation models to analyze the obtained data.

This paper therefore is aimed at investigating whether women autonomy variables as measured by decision making abilities bestowed on women alongside other socio-economic variables are significant in determining and influencing the choice of maternal care provider in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Theoretical Framework

The theoretical framework for this study is based on the theory of consumer behavior. Consumer behavior is a study on how people choose from among many alternatives the kind of goods and services to allocate their limited resources into. Basically the study of consumer behavior is about consumer choice of commodities and the factors that influence the choice preferred relative to the existing set of choices that a consumer faces, subject to a budget line.

This theory postulates that a consumer will choose a given alternative based on their prior knowledge and perceives benefits, without disregarding the associated constraints and rewards. Individuals are also guided by norms in the society and individual capabilities. At any one time therefore, individual action is a combination of preferences and beliefs of her social context (Bowles, 2002).

It is expected that a rational woman will choose that maternal healthcare facility which yields maximum benefits while incurring the least cost. In pursuit of this objective, she will therefore draw a comparative analysis on the various choices available in the market. However, a number of constraints limit her utility maximization objective. For instance, maternal healthcare in a public facility could be cheap in terms of costs as compared to a private facility. However, the patient has to grapple with the waiting time at the facility. On the other hand, a private facility may grant the patient better and quality service although this comes at an extra cost.

3.1.1 Random Utility Rationale

Studies with discrete dummy dependent variables are often explained by McFadden's additive random utility model (ARUM) which guides a household's choice. Here a woman has to choose from among J outcomes labeled 1, 2 and 3. The numbering is meant for ease of identification and not order of preference. The utility to a woman *i* for choice *j* can be expressed as linear in some predictors and a random error term, as below;

$$U_{ij} = \mathbf{x}_i \beta_j + \varepsilon_{ij}, \qquad j = 1, \ldots, J$$

Specifically, the additive random utility model is expressed as;

$$U_{ij}\left(x_{ij}; z_{ij}\right) = V_j\left(x_{ij};\beta\right) + \varepsilon_{ij}$$
$$\varepsilon_{ij} = V_j\left(x_{ij};\beta\right) + \varepsilon_{ij} - V_j\left(x_{ij};\beta\right)$$

Where;

U_{ij} Indicate individual i's utility obtained from choice of alternative *j*

x_{ij} Is individual *i's* observed attributes toward choosing alternative *j*

z_{ij} Represents characteristics of individual *i* that are not observable in choosing alternative *j*

$V_j\left(x_{ij};\ \right)$ Represents calculated utility

$£_{ij}$ Is the unmeasured utility. The coefficients obtained from the independent variables is represented by

Given an individual who has to randomly choose between any two alternatives K and L, K is chosen to L if the utility in K is greater than that of L.

$$V_K\left(x_{iK}\ ;\beta\right) + \varepsilon_{iK} > V_L\left(x_{iL}\ ;\beta\right) + \varepsilon_{iL}$$
$$V_K\left(x_{iK}\ ;\beta\right) - V_L\left(x_{iL}\ ;\beta\right) - \left(\varepsilon_{iL} - \varepsilon_{iK}\right)$$

We can condense this further by letting;

$$q(x_i\ ,\beta) = V_K\left(x_{iK}\ ;\ \beta\right) - V_L\left(x_{iL}\ ;\ \beta\right)$$

And

$$\mu = \left(\varepsilon_{iL} - \varepsilon_{iK}\right) = \left[U_{iL}\left(x_{iL}\ , Z_{iL}\right) - V_L\left(x_{iL};\ \beta\right)\right] - \left[U_{iK}\left(x_{iK}\ , Z_{iK}\right) - V_K\left(x_{iK};\ \beta\right)\right]$$

We can then represent maternal health care seeking behavior using a latent variable, M_i^* expressed as;

$$M_i^* = q(x_i\ ,\beta) - \mu_i$$

$V_K\left(x_{iK}\ ;\beta\right) + \varepsilon_{iK}$ Represents the utility attributed to choice of alternative K, and $V_K\left(x_{iK}\ ;\beta\right)$ represents observed characteristics of the utility calculated while ε_{iK} is the unmeasured utility. $V_L\left(x_{iL}\ ;\beta\right) + \varepsilon_{iL}$ is the utility ascribed to choice of alternative L where $V_L\left(x_{iL}\ ;\beta\right)$ is the observed characteristics of the utility determined and ε_{iL} is the unmeasured utility

$q(x_i, \beta)$ shows the observable difference in derived utilities when alternative K is chosen over L.

μ_i is the unobservable difference resulting from omitted variables.

Due to measurement and specification errors, we have error terms ε_{iK} and ε_{iL} in the model.

U Is the utility function of the choice made.

Z_K and Z_{iL} capture the vectors of characteristics that best explain alternatives K and L respectively

$\forall j$ Refers to all alternatives, j, in the choice set

3.2 The Multinomial Logit Model

Since choice of maternal care provider is a utility maximization scenario with more than two outcome choices, we employed multinomial logit for estimation. Specifically, multinomial logistic regression model has been to determine the factors that influence the choice of maternal care provider in Kenya. This model was suitable since our dependent variable has more than two possible outcomes which are mutually exclusive, namely home delivery, public health facility delivery or delivery in a private health facility. It is assumed that the errors in this model are identically and independently distributed (iid) for all the decision makers and choice alternatives. In this model, the probabilities obtained are regarded as having linear estimation parameters, so that an increase in the value of an explanatory variable represent either a higher or lower probability of choosing or not choosing an outcome.

A rational woman *i* will prefer place of delivery *j* if

$$U_{ij} > U_{ik}, \forall k \neq j$$

In terms of probability, the likelihood of a woman choosing a specific option can be represented as

$$P(y_i = j) = P\left[U_{ij} > U_{ik}\right], \forall k \neq j$$

In our case, during delivery a woman is faced with three choices of preferred place of delivery. For instance the probability that she will choose a private health facility for delivery can therefore be represented as;

$$P(y_i = 3) = P(U_{i3} > U_{i2}\ ,\ U_{i3} > U_{i1})$$

We can compute the probability using this equation;

$$P(y_i = j) = P_{ij} = \frac{exp(x_i\ \beta_j)}{\sum_{k=1}^{J} exp(x_i\ \beta_k)}$$

Where p_{ij} Captures the probability of the i^{th} person choosing alternative *j*.

y_{ij} Shows the choice of alternative *j* by the i^{th} participant

J = 1 when 'home' is chosen as place of delivery

2when 'public health facility' is chosen as place of delivery

3 when 'private health facility' is chosen place of delivery

3.3 Maximum Likelihood Estimation

The likelihood function that produces the multinomial density function given the three choices of delivery care provider is expressed as follows;

$$L = \prod_{i-1}^{N} \prod_{j-1}^{j} p_{ij}^{yij}$$

The Multinomial density function estimates the predicted probabilities for the three alternative choices independently.

$$f(y) = p_1^{y1} \times p_2^{y2} \times p_3^{y3} = \prod_{j=1}^{j} p_j^{yi}$$

where y=1 if alternative j is chosen and 0 otherwise, and j=1, 2, 3.

3.3 Description of Variables

3.3.1 Dependent Variables

This study focused on choice of maternal care provider that a woman faces during delivery. This is represented by the place that a woman prefers to deliver at, being either home deliver, deliver in a public institution or deliver private facility. Home delivery encompasses all deliveries that occurred at the respondent's home, other home or enroute to provider of delivery care. Delivery at a public health facility included delivery in public hospitals, health centres, dispensaries and other public

health facility while private covered deliveries in mission hospital/clinic, nursing/ maternity home and other private medical centre. Delivery at home was treated as the reference category.

3.3.2 Explanatory Variables

Explanatory variables in this study are categorized broadly into two; social economic variables and decision variables. Social economic variables have been traditionally associated with utilization of maternal healthcare and herein we investigate their relationship with choice of maternal care provider. On the other hand, decision variables investigated are used to measure women autonomy which basically involves an individual's capacity to act independently. These variables are important since they impact various aspects of women reproductive health.

Age at first birth

This variable captures the age of the woman, measured in years, when she had her first child. It is expected that women who deliver while young will deliver in government institutions compared to women who give birth when they are older as they are inexperienced and also due to affordability of services in public health institutions. This study therefore seeks to test the hypothesis that the younger the woman the more preferred is public health facility for delivery care.

Parity

This is the number of times a woman has ever given birth. Studies indicate that women with more children tend to deliver at home compared to those who have fewer children. This is due to the associated perceived experience.

Woman education level

Most studies agree that education level of a woman increases maternal healthcare utilization. Education level is categorized as no education, primary, secondary or higher.

Husband's education level

Educated husbands are expected to encourage their wives to choose hospital delivery services compared to their uneducated counterparts. This is because they are deemed to understand the benefits of hospital delivery and the consequences of the contrary.

Place of residence

Women who live in rural areas are expected to choose delivery in health facilities less comparative to their peers in urban areas. Women in rural areas are faced with challenges of accessing health facilities compared to urban areas where facilities are easily accessible.

Work status

This variable was used to show whether working women at the time of the survey and those not working choose delivery care provider in a different way. It is expected that working women will deliver in health institutions more than those not working.

Income level

This variable is represented by the poor, middle income and rich class in the KDHS. Some studies found the variable as useful while others did not. In the KDHS 2008/2009 data, the variable is captured as wealth index unlike in the previous editions. This variable was used to indicate whether higher income bracket influence the choice of maternal care provider among the rich, middle or poor classification.

Religion

Religion is an integral part of any society. We include this variable to test whether religious beliefs affect choice of maternal care provider. We classified religion as Christian, Muslim or other.

Final say on woman's own healthcare

This variable seeks to establish whether women who are involved in decisions regarding own healthcare options choose maternal care provider differently from their counterparts who never participate in decision making.

Final say on making large household purchases

We include this variable to measure whether women who participate in making decisions on purchase of more permanent family items such as land prefer to deliver at home, public or private facility. It is expected that women who are involved in decision making in acquisition of large household purchases will choose hospital delivery more than women not involved in decision making. This is because involvement in such decisions means greater financial control in the household.

Final say on making daily household purchases

Decisions on purchase of daily household are usually assumed to be made by women in many households in Kenya. This variable measures the economic power of women. We will seek to establish if having the final say on purchase of daily household items impacts choice of maternal care provider in Kenya.

Final say on visit to family or relatives

Decisions on visitation to maternal family and relatives unaccompanied were used to measure the freedom of movement of the woman. It is expected that women who can decide on their own about such visits will be able to also decide unaided their preferred choice of place of delivery

Final say on deciding what to do with money husband earns

This variable was used to indicate control over family finances because Kenya as patriarchal society, earnings of a husband are assumed to be the family's finances. It is expected that women who are either sole decision makers of joint decision makers will utilize health facilities more as maternal care provider of choice compared to home delivery.

3.4 Data Source

This study used 2008/2009 Kenya Data Household Survey (KDHS). The data was collected by KNBS in collaboration with several other stakeholders. The survey was household based and covered all regions in the country. It used a two stage sample design, whereby the first stage was selecting data collection points were identified. 400 clusters were identified, 133 in urban areas and 267 in rural areas. The second stage was the identification of systematic households. A total of 10,000 households were interviewed. The study targeted women aged 15-49 years who were either usual

residents or visitor present in study cluster during the night of the before the survey and men aged 15-54years. Three questionnaires were administered; the household questionnaire, the women's questionnaire and the men's questionnaire. The women's questionnaire captured data covering background characteristic, reproductive health, family planning, antenatal, delivery, and postnatal care, husband's background characteristics, marriage and sexual activity, adult and maternal mortality, domestic violence among others. The questionnaire was translated into 12 major languages for ease of understanding and wider coverage. Quality control measures were employed at all levels of research design, sampling methods, data collection and reporting thus ensuring accuracy of final database.

3.5 Definition of Variables Used in the Model

Table 1: Definition of Variables as Used in the Model

Variable	Definition
Dependent variable	
Place of delivery	Home=0 if a woman delivered at her home, in other home or enroute to maternal care provider Public=1 if a woman delivered in a government hospital, government health center, government dispensary or other public. private=2 if a woman delivered in a mission hospital/clinic, private hospital/ clinic, nursing/maternity home or other private medical facility.
Explanatory variables	
Age category	Age category =0 if a woman is aged between 15-19 years. Age category =1 if a woman is aged between 20-24 years. Age category =2 if a woman is aged between 25-29 years. Age category =3 if a woman is aged between 30-34 years. Age category =4 if a woman is aged between 35-39 years. Age category =5 if a woman is aged between 40-44 years. Age category =6 if a woman is aged between 45-49 years.
Age at first birth	Age in years of a woman at the time of her first delivery.
Woman's Education Level	Woman's Education Level =0 if the woman has no education Woman's Education Level =1 if the woman has primary education Woman's Education Level =2 if the woman has secondary education Woman's Education Level =3 if the woman has higher education
Husband's education level	Husband's Education Level =0 if the husband has no education Husband's Education Level =1 if the husband has primary education Husband's Education Level=2 if the husband has secondary education Husband's Education Level =3 if the husband has higher education
Work status	Work status = 0 not currently working Work status =1 currently working
Parity	Number of children a woman has ever given birth to.
Income level	Income level =0 if poor

	Income level=1 if middle Income level=2 if rich
Religion	Religion =0 if Christian Religion =1 if Muslim Religion =3 if no religion
Residence	Residence= 0 if rural Residence = 1 if urban
Final say on woman's own healthcare	Final say on woman's own healthcare= 0 if woman alone Final say on woman's own healthcare=1 if woman and partner Final say on woman's own healthcare=2 if partner alone Final say on woman's own healthcare=3 if someone else
Final say on large purchases	Final say on large purchases= 0 if woman alone Final say on large purchases =1 if woman and partner Final say on large purchases =2 if partner alone Final say on large purchases =3 if someone else
Final say on purchases of daily household items	Final say on purchases of daily household items = 0 if woman alone Final say on purchases of daily household items =1 if woman and partner Final say on purchases of daily household items =2 if partner alone Final say on purchases of daily household items =3 if someone else
Final say on family visits	Final say on family visits = 0 if woman alone Final say on family visits =1 if woman and partner Final say on family visits =2 if partner alone Final say on family visits =3 if someone else
Final say on control of finances	Final say on control of finances = 0 if woman alone Final say on control of finances =1 if woman and partner Final say on control of finances =2 if partner alone Final say on control of finances =3 if someone else

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research methodology. The chapter entails presentation and discussion of the descriptive statistics of the data used, followed by findings of a multinomial logistic regression model used to analyze the factors that determine the choice of maternal care provider that a woman faces during delivery, being home delivery, delivery at a public health institution or private health institution. The factors both are socio-economic as well as women autonomy characteristics. The findings are presented in tables with explanations given in prose thereafter.

4.2 Descriptive Statistics

Table 2 below presents the summary statistics of the variables used in the model.

Table 2: Summary Statistics

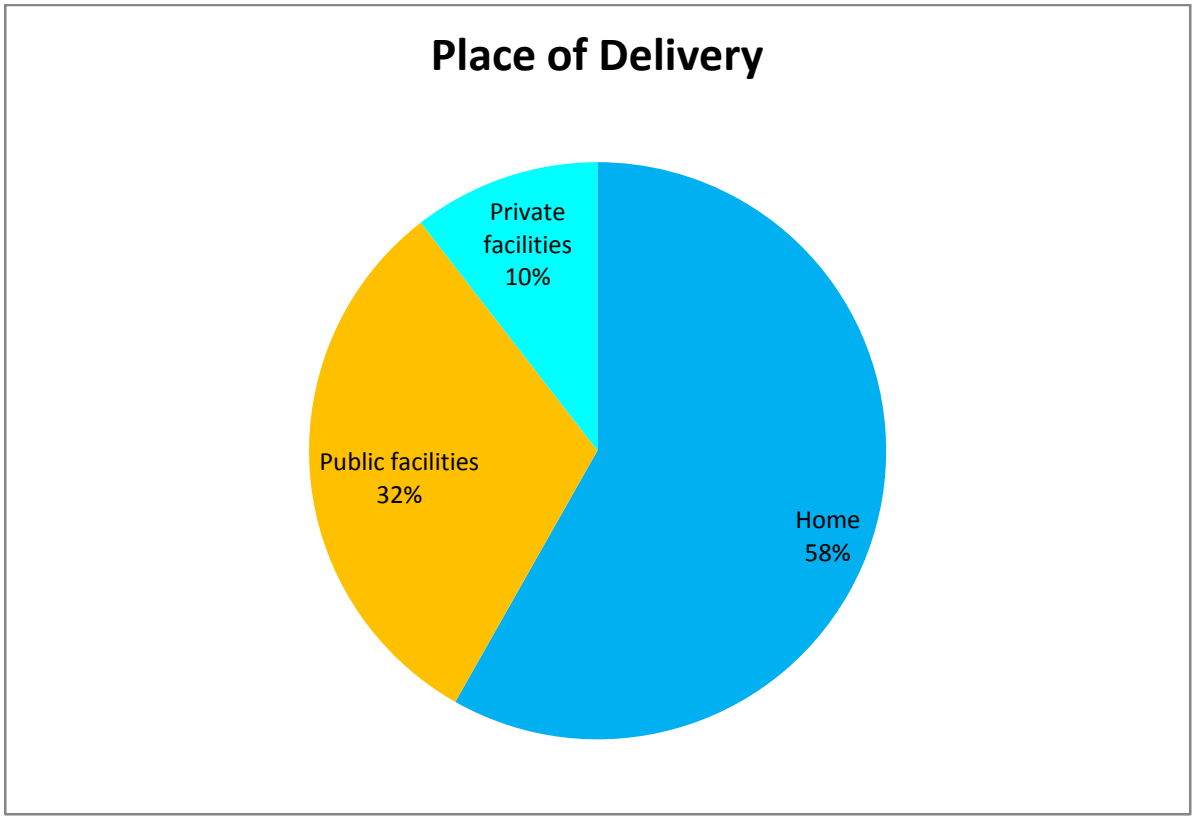
Variable	Obs	Mean	Std. Dev.	Min	Max
Home dummy (1=home)	22534	0.1543	0.361244	0	1
Public dummy(1=Public)	22534	0.086358	0.280899	0	1
Private dummy (1=Private)	22534	0.027958	0.164856	0	1
Age at first birth	22534	18.61911	3.461665	11	39
parity	22534	5.277447	2.691174	1	15
Age Category					
15-19 dummy (1=15-19)	22534	0.016153	0.126068	0	1
20-24dummy (1=20-24)	22534	0.10047	0.300633	0	1
25-29dummy (1= 25-29)	22534	0.15683	0.363648	0	1
30-34dummy (1=30-34)	22534	0.188826	0.391379	0	1
35-39dummy (1=35-39)	22534	0.193619	0.395142	0	1
40-44dummy (1=40-44)	22534	0.16504	0.371224	0	1
45-49dummy(1=45-49)	22534	0.179063	0.383413	0	1
Woman's education level					
No education dummy (1=No education)	22534	0.237818	0.425757	0	1
Primary dummy (1=Primary)	22534	0.556581	0.496799	0	1
Secondary dummy (1= Secondary)	22534	0.162643	0.369048	0	1
Higher dummy (1=Higher)	22534	0.042957	0.202765	0	1
Husband's education level					
No education dummy (1=No education)	22534	0.179817	0.384044	0	1
Primary dummy (1= Primary)	22534	0.459306	0.498352	0	1
Secondary dummy (1= Secondary)	22534	0.250022	0.433035	0	1

Higher dummy (1= Higher)	22534	0.07238	0.259121	0	1
Residence					
Rural dummy(1=Rural)	22534	0.792669	0.405404	0	1
Urban dummy(1=urban)	22534	0.207331	0.405404	0	1
Work status					
Not working dummy (1=not working)	22534	0.359235	0.479787	0	1
Working (1=working)	22534	0.636594	0.480991	0	1
Religion					
Christian dummy (1=Christian)	22534	0.779622	0.414511	0	1
Muslim dummy(1=Muslim)	22534	0.183767	0.387303	0	1
No religion dummy(1=no religion)	22534	0.030532	0.172049	0	1
Income level					
Poor dummy (1=poor)	22534	0.464676	0.498762	0	1
Middle dummy (1=middle)	22534	0.186873	0.389818	0	1
Rich dummy (1=rich)	22534	0.348451	0.47649	0	1
Woman's own healthcare					
Woman alone dummy (1=woman alone)	22534	0.225659	0.418025	0	1
Woman with partner dummy (1=woman with partner)	22534	0.353155	0.477961	0	1
Partner alone dummy (1= partner alone)	22534	0.233824	0.423271	0	1
Someone else dummy (1=someone else)	22534	0.002175	0.046582	0	1
Large household purchases					
Woman alone dummy (1=woman alone)	22534	0.120573	0.325638	0	1
Woman with partner dummy (1=woman with partner)	22534	0.402192	0.490351	0	1
Partner alone dummy (1= partner alone)	22534	0.288187	0.452929	0	1
Someone else dummy (1=someone else)	22534	0.002663	0.051533	0	1
Daily household purchases					
Woman alone dummy (1=woman alone)	22534	0.4191	0.493423	0	1
Woman with partner dummy (1=woman with partner)	22534	0.233381	0.422992	0	1
Partner alone dummy (1= partner alone)	22534	0.160691	0.367253	0	1
Someone else dummy (1=someone else)	22534	0.001598	0.039939	0	1
Family visits					
Woman alone dummy (1=woman alone)	22534	0.204757	0.403533	0	1
Woman with partner dummy (1=woman with partner)	22534	0.395624	0.488995	0	1
Partner alone dummy (1= partner alone)	22534	0.21208	0.40879	0	1
Someone else dummy (1=someone else)	22534	0.001598	0.039939	0	1
Control of finances					
Woman alone dummy (1=woman alone)	22534	0.062128	0.241394	0	1
Woman with partner dummy (1=woman with partner)	22534	0.370462	0.482939	0	1
Partner alone dummy (1= partner alone)	22534	0.329191	0.46993	0	1
Someone else dummy (1=someone else)	22534	0.002352	0.048441	0	1

Source: KDHS 2008/2009

The proportion of births that occur at home was found to be significantly higher than the percentage distribution of births that occur both at public and private health facilities combined. 3,477 of the women interviewed delivered at home compared to 1,946 and 630 who delivered in public as well as private health facilities. See graph below;

Figure 1: Percentage Distribution of Choice of Place of Delivery



Among the women interviewed, 64 % were aged between 20 and 39 years old at the time of the interview 1.6% represented women aged between 15-19 years old, while those aged above 40 years represented 34.4% of the sample size. The average age of the woman during the birth of their first born was reported at 18.6 years, with a standard deviation of 3.5 years. This means that most women give birth for the first time aged between 15 and 21 years.

The proportion of women who lived in urban areas was 20.7% while 79.3% lived in rural areas of all the women interviewed. In terms of education level, more than half (55.6%) of women attained primary education, 16% attained secondary education and the remaining 4% had higher education level. 23.8% of women were not

educated. The trends were almost similar for husband's education level where 18% had no education, 45.9% had primary education, 25 % had secondary education and 8.2% had higher education. It was apparent that more women had no education than men, whereas more men attained secondary and higher education levels compared to women.

Parity was highest for only 3.8% of women who reported to have had more than 10 children, with the highest number of children ever born reported at 14. Most women (63.66%) reported to have had between 2 and 6 children, while only 5.25 % had one child. 27.3% had between 7 and 10 children. In terms of religion, 78% of the women interviewed were Christians, 18.38 % were Muslims and 3.05% had no religion.

Statistics indicate that of the interviewed women, 46.5% fell in the poor category, while the rich were 34.8% of the total number of interviewed women. 18.7% were in the middle income category. More than half (63.7%) of women were working, with 35.9% reported not to be working.

The various decisions made by households were measured by who had the final say regarding the woman's healthcare, daily household purchases, large household purchases, visiting maternal family and other relatives as well as control over family income. 22.6% of women had final say on their own healthcare while 35.5% made the decision jointly with their partners. While 23.4% of the women interviewed agreed that the husband made the decisions alone, 0.2% of the women reported that someone else had the final say on matters concerning a woman's healthcare. This someone else could be friends, in-laws or even the woman's maternal family members. The scenario was not different with the other decisions, with most decisions being made jointly by the woman and their husbands or by the husband alone. Women dominated in making decisions regarding daily household purchases (41.9%) while they least had final say in regards to control of finances (6.2%). In all decisions, less than 0.3% of the women interviewed reported that someone else had the final say.

4.3. Multinomial Logit Regression Results

Table 2 above presents the multinomial logit regression results for the choice of maternal care provider in Kenya.

Table 3: Multinomial Logistic Regression Results: Marginal effects

Variables	Public	Private
Age at first birth	-0.000582	0.000680
	(0.00269)	(0.00163)
Parity	-0.0240***	-0.0153***
	(0.00564)	(0.00393)
Age Category (15-19)		
20-24	0.000823	0.00365
	(0.0312)	(0.0184)
25-29	0.0261	0.0138
	(0.0344)	(0.0202)
30-34	0.0141	0.0608**
	(0.0396)	(0.0250)
35-39	0.0389	0.0614*
	(0.0477)	(0.0315)
40-44	0.0304	0.174***
	(0.0586)	(0.0491)
45-49	0.120	0.108
	(0.0840)	(0.0689)
Working status (not working)		
Currently working	0.0414***	-0.00254
	(0.0137)	(0.00899)
Woman's Education level (no education)		
Primary	0.0743***	0.0344**
	(0.0235)	(0.0164)
Secondary	0.184***	0.0366*
	(0.0309)	(0.0189)
Higher	0.217***	0.154***
	(0.0556)	(0.0351)
Husband education level (no education)		
Primary	0.0814***	0.0255
	(0.0261)	(0.0170)
Secondary	0.121***	0.0800***
	(0.0291)	(0.0189)
Higher	0.104***	0.123***
	(0.0394)	(0.0261)
Residence (Rural)		
Urban	0.128***	0.0456***
	(0.0209)	(0.0122)
Religion (Christian)		
Muslim religion	0.0450**	-0.0217*
	(0.0208)	(0.0129)
No religion	-0.0457	0.00261
	(0.0477)	(0.0409)
Income level (poor)		

Middle	0.108***	-0.00156
	(0.0195)	(0.0125)
Rich	0.109***	0.0567***
	(0.0199)	(0.0130)
Final say on woman healthcare (Woman alone)		
Woman and partner	0.0205	0.00718
	(0.0177)	(0.0108)
Partner alone	-0.00322	0.0291**
	(0.0193)	(0.0133)
Someone else	0.448	0.139
	(662.6)	(662.8)
Final say on making large household purchases (Woman alone)		
Woman and partner	-0.0240	0.00104
	(0.0248)	(0.0181)
Partner alone	-0.0450*	-0.0138
	(0.0244)	(0.0390)
Someone else	0.0403	-0.114
	(0.290)	(0.418)
Final say on making daily household purchases (Woman alone)		
Woman and partner	-0.00339	-0.00843
	(0.0162)	(0.0101)
Partner alone	0.0390*	-0.00435
	(0.0200)	(0.0136)
Someone else	-0.0587	0.153
	(0.126)	(0.124)
Final say on visits to family or relatives (Woman alone)		
Woman and partners	-0.0241	0.0159
	(0.0183)	(0.0116)
Partner alone	-0.0265	0.000485
	(0.0199)	(0.0129)
Someone else	0.121	-0.0414
	(0.122)	(0.0581)
Final say on control of finances (Woman alone)		
Woman and Partner	-0.0142	-0.0198
	(0.0279)	(0.0198)
Partner alone	-0.0297	0.00299
	(0.0273)	(0.0199)
Someone else	-0.342***	-0.120***
	(0.0256)	(0.0188)
Observations	4,800	4,800
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Source: KDHS 2008/2009

4.3.1 Econometric Results

The dependent variables in the multinomial logistic regression model were home, public or private health facilities for delivery, with home delivery as the reference category. We computed marginal effects that we used to explain the changes in probability for continuous variables at the means of the independent variables since only the sign of the estimated coefficients are useful but not the coefficients themselves. The multinomial logistic regression results that show the changes in Probit index are The multinomial logistic regression used 4,800 observations with a log likelihood statistic of -3501.74 and a likelihood ratio (LR) chi-square test with 70 degrees of freedom of 1913.07. The LR chi-square test obtained indicate that for all equations of place of delivery (public health facility relative to home delivery and private health facility delivery relative to home delivery), at least one of the predictors' regression coefficient is not equal to zero. Our null hypothesis that all the regression coefficients across both models are simultaneously equal to zero is achieved by the small p-value of 0.0000 < 0.0001 (prob>chi2=0.000) which signifies that at least one of the regression coefficients in the model is not equal to zero.

4.3.2 Changes in Probability

The above results show the response probability or a woman’s response on place of delivery as public health facility, private health facility or home delivery. We shall concentrate on analysis of variables that coefficients are statistically significant only. The results are discussed starting with socio-economic variables, then women autonomy variables are discussed towards the end of the section.

Parity is the number of children that a woman has born during her lifetime, whether living or dead. This study revealed that parity impacted negatively on place of delivery at 99% significance level. For every additional pregnancy, the probability of a choosing a public hospital for delivery reduces by 2.4% compared to home delivery and 1.5% for private facilities. This implies that women with higher parity prefer to deliver at home more than in public and private health facility. This outcome is in agreement with results from previous studies where higher parity was found to be negatively related to hospital delivery compared to home delivery, except where adverse outcomes of previous delivery had been reported (Obermeyer & Potter, 1991;

Bhatia & Cleland, 1995; Kowaleski, Mujinja &Jahn, 2002; Ethiopian society of social studies, 2005; Jayaraman et al., 2008; Kistiana, 2009).

Three age categories were found to be significant for private health facility delivery; 30-34, 35-39 and 40-44. Compared to women aged 15-19, the probability of women aged 30-34 to choose a private health facility for delivery increases by 6.08% and 6.14% for those in 35-39 age category. Older women of 45-49 years have a higher probability of 17.4% to choose private health facility for delivery compared to women aged 15-19 years. Since the probability increases with age, we can conclude that with advancement in age most women choose private health facilities for delivery compared to younger women. This could be due to complications of delivery experienced as a result of advanced age that compels most women to seek maternal care in health facilities. Also, as women advance in age, they are more exposed to information and are more economically empowered. Hence they are able to make more informed choices and afford services of a private health facility.

Working status was found to be significant in utilization of public health facilities for working women compared to women who were not working. The results indicate that currently working women are 4.1% more likely to use public health facilities for delivery compared to those not working. This is contrary to results obtained by Chepkoech (2003) who concluded that working women were more likely to deliver in a private hospital than women who are not working.

Education level in women has been found to be a useful predictor of utilization of maternal healthcare services. This study found all levels of women education level to be statistically significant, and having a positive relationship with choice of both public and private health facility for maternal care services compared to home delivery. Women with primary education had 7.34% higher probability of choosing public health facilities for delivery more than women with no education, while for private health facilities the probability is 3.4% higher than for women with no education. The scenario is the same for secondary level education. Women with secondary education have 18.4% and 3.7% probability to choose public and private health facilities respectively compared to women with no education. Women with higher education levels are more probable to utilize public and private health facilities

by 21.7% and 15.5% respectively. These findings are consistent with findings from other studies, that women who are educated utilize maternal healthcare services more.

Higher levels of husband's education increases women's choice of health facilities as providers of maternal care. Having husbands with primary education increases the probability of women delivering in public by 8.14% more than women whose husbands have no education. As husband's education level increases to secondary, the probability of women delivery in public and private health facilities increases by 12.1% and 8% respectively compared to women whose husbands have no education. Husbands with higher education level are associated with a probability increase of 10.4% and 12.3% in women choosing public and private health facilities as place of delivery respectively. We also noticed that women whose husbands have higher education level have a higher probability of delivery in a private hospital than public hospital compared to home delivery. For women whose husbands have secondary levels of education, the probability of delivering in a public health facility is higher than private facility compared to home delivery. This can be explained by the fact that educated husbands are more informed and have resources that aid them in supporting their wives to choose hospital delivery.

Women who reside in urban areas are more likely to seek maternal care services in public institutions compared to women who live in rural areas. The probability of choosing a public health facility for maternal care services is 12.8% more for women who live in urban areas compared to rural areas. Similarly, women in urban areas are 4.6% more probable to seek maternal care services in private institutions compared to those who live in rural. This could be attributed to long distances to nearest public health facilities and poor transport systems in rural areas.

Religious beliefs define the way of life for most people, outlining the dos and don'ts of society. In our study, the probability to choose public and private health facilities respectively for maternal care services for Muslim women is 4.5% more and 2.17% less compared to Christian women.

Income level signifies the financial ability that is at the disposal of a woman when most needed to pay for maternal care service. Income level was found to have positive

incremental relationship with the choice of maternal care provider. The probability of choosing a public health facility for maternal care services by women in middle income category is 10.8% more than women in the poor income category. Likewise, for women in the rich category, the probability of choosing public and private health facilities for maternal care is 10.9% and 5.67% respectively more compared to women in the poor category. This is because women with higher income levels are able to meet the cost of maternal care services in health facilities. The implication therefore is that women with more income will utilize both private and public health facilities for maternal care services compared to poor women.

We established that in situations where the partner alone makes the decision on the woman's own healthcare, the probability to choose a private health facility is 2.91% more compared to where the woman alone has final say. On the contrary, the partner alone having final say on making daily household purchases increases the probability to choose a public health facility for delivery by 3.9% compared to where women alone are the final decision-makers. These findings consistent with previous studies conducted elsewhere.

Where the partner alone has final say on purchase of large household items, the probability that the woman will deliver in a public health facility is lowered by 4.5% compared to where woman alone has final say. Similarly, where neither the woman nor her spouse are involved in decision making either individually or jointly, the probability to choose a public or private health facility for maternal care services is decreased by 34.2 % and 12% respectively compared to where the woman makes the decision alone. The ability of women to participate in decisions about how family financial resources are used indicates the economic power that women have in their households. This therefore means that where women have control over family finances, use of health facilities is boosted.

Having final say on family visits was found to be insignificant to the choice of maternal care provider.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusion

This study sought to determine the choice of maternal care provider in Kenya using KDHS 2008-09 data. The continued rise in cases of home deliveries by women necessitated the investigation of the relationship between socio-economic characteristics of a woman, women autonomy variables and choice of maternal care provider in Kenya. From the reviewed literature, it emerged that few studies have been carried out concerning choice of delivery care in Kenya, with extra focus on the factors of women autonomy. The study will contribute in filling in the knowledge gap currently existing in this area.

We estimated a multinomial logit model of place of delivery against several independent variables. The dependent variables are categorized as socio-economic variables and women autonomy variables. The socio-economic variables analyzed are mother's age at first birth, parity, age category, working status, woman's education level, husband education level, residence, religion and income level. The women autonomy variables include final say on woman healthcare, final say on making large household purchases, final say on making daily household purchases, final say on visits to family or relatives and final say on control of finances.

The study established that most social economic variables yielded results consistent with previous studies. Higher parity is associated with high probability of home delivery compared to health facility delivery, results similar those obtained from previous studies. As the age category increases, more women tend to prefer private health facilities for delivery.

We found a positive relationship between probability for choice of health facilities for maternal care services and being educated, having an educated husband, living in urban areas and being in the rich income category. Women in the middle income category only showed significant results in choice of public health facilities. Women age between 30 and 49 years were found to have a higher probability of choice of private health facilities for maternal care services compared to young women. This

could be associated with the caution that women in highest age group will exercise due to life threatening risks that come with delivery in old age, hence they seek professional care. Being educated increases a woman's knowledge of the existing risks and options for delivery and the benefits of delivering in a health facility.

While women autonomy variables yielded mixed results, it was generally observed that partner's influence on most decisions having resulted in choice of maternal care provider as either private or public health facility. Women who have a final say on control of finances are more likely to use public and private health facilities more than where someone else other than the woman and her husband make the decision.

5.2 Policy Recommendations

The findings of this study indicated that obtaining higher education levels increase probability of choice of both public and private hospitals for maternal care. In as much as the introduction of free primary education in Kenya has increased the proportion of Kenyans, both male and female who enroll for basic education, concerted effort is needed in ensuring sustained transition rate from one level of education to another for all gender. This will ensure that in the long run, we have a population of Kenyans with higher education levels and hence improved utilization of maternal care facilities. In the short run, sensitization campaigns in local languages should be intensified with the aim of encouraging both men and women in lower levels of education to seek specialized maternal care.

The number of children that are born in a household translate to the fertility rate of the household and the country at large. While giving birth to many children is not a problem in itself, yet currently with every subsequent birth women are exposed to potential risk of disability and even death. This is due to infrastructural challenges, inaccessibility of health facilities in rural areas, and to some extent retrogressive cultural practices and religious beliefs. The government should endeavor in earnest in improving infrastructural amenities of health facilities, improve accessibility in remote areas and increased campaigns in rural areas to encourage usage of health facilities for maternal care.

Prevailing high poverty level is associated with high unemployment rate in the country. While the government seeks to encourage most women into self employment through various funding options like Uwezo fund and Women enterprise fund, more concerted and well coordinated effort needs to be put in encouraging uptake of such programmes that seek to improve income levels for women and reduce poverty.

Kenya, like most African countries, is dominated by patriarchal norms that significantly hinder women from making autonomous decisions. Women involvement in decision making at household level is key in the fight against maternal mortality. Women should be empowered to take a more pro-active role in areas concerning financial decision making at household level. This can be achieved through formal and civic education, and through all other existing mechanisms.

REFERENCES

Arisa, L.N., (2012). *Health Care Expenditure and Health Outcomes in Kenya*; Unpublished Master of Arts Thesis, University of Nairobi.

Awiti, O.J., (2002). *Health Care Seeking Behavior in Kenya: A Case Study of Vihiga District;* Unpublished Master of Arts Thesis, University of Nairobi.

Ayivor, E.C.K., (2004). Factors Influencing the Choice of Clinical Facilities During Childbirth in Ghana, in *Improving Health Policy in Africa,* eds G Mwabu, J Wang'ombe, D Okello & G Munishi, Nairobi, University of Nairobi press, 107-120.

Bhatia, J. C., & Cleland, J. (1995). Determinants of Maternal Care in a Region of South India. *Health Transition Review*, 5(2), 127-142

Grossman, M., (2001). *On the Concept of Health Capital and the Demand for Health*, National Bureau of Economic Research.

Bloom, S.S., Wypij, D., & Gupta, M.D, (2001). Dimensions of Women's Autonomy and the Influence on Maternal Healthcare Utilization in a North Indian City. *Demography* 38(1), 67-78.

Bowles, S (2002), *Microeconomics: Behavior, Institutions and Evolutions* New Jersey: Princeton University Press.

Carter, M.W., (2002). 'Because He Loves Me': Husband's Involvement in Maternal Health in Guatemala', *Culture, Health & Sexuality*, 4(3), 259-279

Ethiopian Society of Population Studies, (2008). *Maternal Healthcare Seeking Behavior in Ethiopia*: Findings from EDHS 2005, Addis Ababa.

Gage, A.J., & Calixte, M.G. (2006). Effects of the Physical Accessibility of Maternal Health Services on Their Use in Rural Haiti. *Population Studies*, 60(3), 271-288.

Helman, C.G. (2007). *Culture, Health and Illness*, 5th edn, London, Hodder Arnold.

Jayaraman, A., Chandrasekhar, S., & Tasfayi, G. (2008). Factors Affecting Maternal Healthcare Seeking Behavior in Rwanda. *USAID Working Papers, Demographic and Health Research,* no.59.

Johnson-Lans, S. (2006). *A Health Economics Primer*, Upper, Pearson Education, Inc.

Karen,S.C., & Andrea, K. (2006). Maternal Health: Does Prenatal Care Make a Difference? *Health Econ*, 15, 461-488

King, M. (1966). *Medical Care in Developing Countries: A Primer on the Medicine of Poverty and A symposium From Makerere,* Nairobi, Oxford University Press.

Kowaleski, M., Mujinja, P., & Jahn, A. (2002). Can Mothers Afford Maternal Healthcare Costs? User Costs of Maternity Services in Rural Tanzania, *African Journal of Reproductive Health* 6(1), 65-73.

Lawson, D. (2004).*Determinants of Health Seeking Behavior in Uganda- Is it Just Income and User Fees that are Important?*' Manchester, University of Manchester.

Long, J.S. (1997). *Regression Models for Categorical Dependent Variables Using Stata. 2nd Edition*. Stata Press.

Machio, P.M. (2008). *Demand for Maternal Health care Services in Kenya;* Unpublished Master of Arts Thesis, University of Nairobi.

Magadi, A.M., Msiyaphazi E.Z., & Brockerhoff, M. (2003). The Inequality of Maternal Healthcare in Urban Sub-saharan Africa in the 1990s, *Population Studies*, 57(3), 347-366.

Mugilwa, O.L. (2002). *Demand for Health Care in Kenya; Case Study of Vihiga District*; Unpublished Master of Arts Thesis, University of Nairobi.

Ngom, P., Debpuur, C., Akweongo, P., Adongo, P., & Binka, FN. (2003). Gate keeping and Women's Health Seeking Behavior in Navrongo, north Ghana. *African Journal of Reproductive Health,* 7, 17-26.

Njaramba, J.G. (1994). *Demand for Maternal Health Services: A Case Study of Antenatal Care in Thika Division of Kiambu District,* Unpublished Master of Arts Thesis, University of Nairobi.

Obermeyer, C.M., (1991). Maternal Healthcare Utilization in Jordan: a Study of Patterns and Determinants, *Studies in Family Planning,* 22(3), 177-187.

Okafor, C.B., & Rizzuto, R.R. Women's and Healthcare Providers' Views of Maternal Practices and Services in Rural Nigeria, *Studies in Family Planning*, 25(6), 353-361.

Okonta, P.I. (2007). Adolescent Sexual and Reproductive Health in the Niger Delta Region of Nigeria- Issues and Challenges, *African Journal of Reproductive Health*, 11(1), 113-124.

Phillips, H. (2002). Use of Maternal Health Care Among African Women in South, *Southern African Journal of Demography,* 8(1), 61-72.

Republic of Kenya. (2008). *Kenya Vision 2030: A Globally Competitive and Prosperous Kenya,* Nairobi, Government printers.

Republic of Kenya. (2009). *Economic Survey*, Nairobi, Government printers.

Republic of Kenya. (2010). *Kenya National Human Development Report*, Nairobi, Government printers.

Republic of Kenya. (2010). *Millenium Development Goals Status Report for Kenya – 2009,* Nairobi, Government printers.

Republic of Kenya. (2010). *Public Expenditure Review, Policy for Prosperity*, Nairobi, Government printers.

Republic of Kenya. (2011). *Economic Survey*, Nairobi, Government printers.

Republic of Kenya. (2012), *Second Annual Progress Report on the Implementation of the First Medium Term Plan (2008-2012)*, Nairobi, Government printers.

Reynolds, H.W., Wong, E.L., & Tucker, H. (2006). Adolescents' Use of Maternal and Child Health Services in Developing Countries, *International Family Planning Perspectives,* 32(1), 6-16

Safe Motherhood Initiative: 20 Years and Counting, 2006. Available from: http://www.givewell.org/files/Cause1/+UNICEF/Lancet%20safemotherhood. accessed on 8 May 2013

Sari, K. (2009). D*eterminants of Maternal Health Care Utilization in Indonesia,* Adelaide, The Flinders University of South Australia.

Shaikh, B.T., & Hatcher, J. (2005). Heath Seeking Behavior and Heath Service Utilization in Pakistan: Challenging the Policy Makers, *Journal of Public Health*, 27(1), 49-54.

Timothy, P.J., & Mohammad, E. (2011), Economic Consequences of Maternal Illness in Rural Bangladesh, *Health Econ* 21:796-810

Walraven, G., Telfer, M., & Rowley. (2000). Maternal Mortality in Rural Gambia: Levels, Causes and Contributing Factors, *Bulletin of the World Health Organization*, 78(5)

Introduction to SAS. UCLA: Statistical Consulting Group, from http://www.ats.ucla.edu/stat/sas/notes2/ (accessed September 24, 2014).

APPENDIX I

SUMMARY OF IMPIRICAL LITERATURE REVIEWS

	Author, year and country	**Variables**	**objectives**	**Analytical tool**	**Design/data source**	**Remarks/ findings**
1	Jagdish C. Bhatia and John Cleland, Karnakata south India, 1995	Dependent variables: routine antenatal check-up, timing of first check-up, source of antenatal care, whether or not delivered by CS, receipt of post natal check up.	-identify socio-economic determinants of receipt of healthcare -identify links between use of services t different stages of the reproductive process and risk factors for adverse outcomes	Logistic regression analysis	Primary (questionnaire) cross-sectional data	-Education and personal hygiene (socio-psychological dimension) are strong predictors of antenatal and delivery use, while autonomy and economic status are weaker predictors with no statistical significance. -Non-Hindus(Muslims) seek antenatal care more than their Hindu counterparts -parity determines care-seeking positively while age is only relevant up to age 18, after which the findings are not affected. Adverse obstetric outcome in the past affect health care seeking behaviour.
2	Shelah S Bloom, David wypij, and Monica Das Gupta (2001) India	-Control over finances -decision-making power -extent of freedom of movement	-to study the influence of women's autonomy on the use of care during pregnancy and birth	Linear regression models Multivariate analyses	Primary data	-women's autonomy , measured by extent of woman's freedom of movement, is a major determinant of maternal healthcare utilization among poor and middle-income women in urban areas of utter Pradesh -women become more autonomous as they age

						-living with mother-in-law has significant influence on decision making power
3	Marga Kowalewski, Phare Mujinja and Albrecht Jahn, Tanzania, 2002.	-financial costs -time costs	- resources spent by users of maternity services to obtain current level of care	Quantitative	Primary data	-opportunity costs (time costs) are higher than financial costs -cash payment for maternity services can be an acute barrier to use of maternity care -90% of women with previous caesarean section came to the hospital for their next delivery.
4	Sari Kistiana, Indonesia, 2009	-husband and wife's Education -Residence -Birth order -Women autonomy -women employment status -women exposure to mass media -maternal age -husband's occupation	-examine relationship of social, economic and demographic factors with utilization of antenatal care and delivery care -analyze the dominant factors that influence utilization of maternal health care -discuss implications of findings and formulate policy on maternal healthcare utilization	-Bivariate analysis -multiple logistic regression	IDHS 2007	- Education has + influence on choice of place of delivery -exposure to mass media has + impact on choice of place of delivery -Women's place of residence influences greatly the choice of place of delivery(urban areas +) -higher birth orders leads to lower chances of delivering in health facility - Women autonomy has weak relationship with maternal health care utilization.

5	Anuja Jayaraman S. Chandrasekhar Tesfayi Gebreselassie, Rwanda, 2008	-deliver at an institution/health care facility, deliver at home with professional assistance, deliver at home with no professional assistance -independent variables include: residence, sex of household head, wealth index, age of the woman at last birth, no. of antenatal visits, birth order, education attainment, work status, husband's education.	- analyze factors determining place of delivery for women who gave birth in five years preceeding the survey	Multinomial logistic regression model	RDHS pooled cross sectional data(1992, 2000 and 2005)	-births in urban areas occur in health facilities. -women in male-headed households delivered in institutions more - women who attended ANC visits is likely to deliver at health facility or at home with assistance -there is a strong association between birth order and choice of place of delivery -education increases chance of delivering in a health facility
	Ethiopian society of social studies, Ethiopia, 2005	Dependent variables: Antenatal care by health professionals, deliver care at health institutions and delivery assistance for all live births that occurred within five years of the survey Independent variables: age, children ever	-examine demographic and socio-economic differentials of health seeking behaviour of women -scrutinise demographic and socio-economic determinants of women's health	Cross tabs and chi-square tests(bi variate analysis) and logistic regression(multivariate analysis)	EDHS 2005	-antenatal care coverage, delivery care and post natal care are positively related to women's education, wealth, household decision autonomy and religion. Women with secondary education and more likely to utilize antenatal services -women with lowest wealth quintile, higher birth order and household decision autonomy are

		born, residence, region, women's education, work status, h/hold wealth index, h/hold decision making autonomy	seeking behaviour -suggest strategies for improving health seeking behaviour of women			less likely to see medical professionals for their most recent birth. - Religion is key in seeking antenatal services. - Younger women are more likely than older women to seek delivery and post natal care. -urban children more likely to be born at health institution than rural children.
6	Timothy Powell‐Jackson and Mohammad Enamul Hoque, Bangladesh, 2011		-explore the economic consequences of maternal ill health in rural Bangladesh	Linear regression	Panel household survey of enrolled women	-There's a large reduction in household resources associated with maternal illness - small reduction in no. of days worked due to maternal complication -families resort to extreme coping strategies to pay for maternal health care
7	Marion W. Carter, Guatemala, 2002		-clarify husband's role s in maternal health and men's and women's perspectives on these roles	Qualitative	Primary data ; focus group discussions	-husbands are highly involved in maternal health: prenatal, birth and postpartum period through provision of money for prenatal care and helping with work at home during postpartum -many husbands give advice during pregnancy on which provider to see and when, based on information obtained during the previous

						pregnancies (complications), relatives (parents) and religious groups. -most men accompany their wives during prenatal care and participate by asking providers related questions -during delivery at home, husbands accompany their wives or stayed in a nearby room, provided emotional and physical support during labour. - helped midwives by providing needed things such as water or clothes as requested by the midwife. -Midwives, men's work demands, hospital regulations, wives' preferences, education about maternal health and the quality of marital relationships pose barriers to men's involvement -male involvement is preferred compared to absolute female autonomy.
8	Chinyelu B. Okafor and Rahna R. Rizzuto, Nigeria ,1994		-explore maternal health services provided by midwives and TBA and the possibility of improved working	Qualitative	Primary data; focus group discussions	-community perceptions, attitudes and beliefs pose serious constraints to healthcare utilization. -men are key determinants of decisions regarding prenatal and delivery care services for their

			relationship between them			wives. Friends and mothers-in-law also provide advice -women who had control over own money could decide where to seek maternal care. -prenatal services are sought when symptoms of illness and belief that they will not be eligible for emergency treatment. -the sour relationship between TBA and midwives make women reluctant to switch between providers even when they would have wished to do so.
9	Pierre Ngom, Cornelius Debpuur, Patricia Akweongo, Philip Adongo and Fred N Binka, Ghana,2003		-to understand the social construction of compounds' gate-keeping systems and how their negative effects on women health seeking behavior may be alleviated	Qualitative: Random and convenient sampling	Primary data source; focus group discussions In-depth interviews	-compound heads and husbands as gate keepers impede women's prompt access to modern healthcare - women economic dependence on their husbands constrains them in making autonomous decisions regarding their health and that of their children -appropriate health interventions are key in improving health standards even in deprived areas.
10	Carla makhlouf Obermeyer and Joseph E. Potter, Jordan, 1991	-Mother's age, -no. of children, -age at marriage -employment -dwelling with all -	-Measure differentials in utilization of maternal health care -Understand the extent to which the	Cross-tabulations; Logistic regression analysis	Jordan fertility and Family Health Survey of 1983	-for both home and public institutions deliveries, prenatal care was obtained in private institutions. -residence in urban areas, high living standard and high education

		amenities -possession of television and refrigerator -standard of living -residence -source of family income -no. of people in household -family structure -children in household aged 14years and below -3+adults in household -older people in the household -education of household head(years) -average education of adults(years)excluding respondent -average room space per individual	differentials may be attributed to characteristics of the population and its demand for health services or the strengths and weaknesses of the health services themselves.			attainment are positively associated with seeking prenatal care, hospital deliveries, births attended by highly qualified personnel, and private clinic deliveries. -high parity and rural residence are negatively related to both. -age of the respondent, respondent's age at marriage, the sector of employment of the household head, and type of family structure don't have significant influence on use of prenatal care.
11	David Lawson, Uganda, 2004	-income -user fees -distance travelled -age	-investigate the significance of income in influencing health care seeking	-Multinomial logit approach	-Uganda Demographic and health survey (UDHS);	-higher income levels increase women's demand for healthcare in government facilities. -control over money by women is

		-Education	behaviour -establish the importance of user fees in influencing health seeking behaviour		-Uganda National Household Survey (UNHS)	important in determining demand for health care -being close to a health centre increases demand for health care. -females sought more health care during their peak child bearing years(16-25 years) while men's demand for private care increased with age - for both men and women increased years of schooling shifts demand for health care from public to private providers due to perceived inferiority of government institutions - distance travelled has inverse relationship with demand for healthcare - user fees reduces usage of health care by women
12	Heidi w Reynolds, Emelita L. Wong and Heidi Tucker, Developing countries, 2006	Dependent variables: antenatal care, delivery care and four vaccinations Independent variables: age, marital status, education, residence, cultural factors, sex of infant, poverty.	-examine adolescent mothers' use of maternal and child health services in developing countries	-Bivariable analysis: cross tabulations, -Multi variable analysis: survey- based logistic regression	- various DHS series in 15 countries	-maternal age had greatest influence on maternal and child healthcare in Bangladesh, India and Indonesia. In African countries there were no significant age differences in usage of skilled antenatal and delivery care. -women's decision making power significantly affects child

						immunization in Sub-Saharan Africa, Latin America and south Asia.
13	Monica Akinyi Magadi, Eliya Msiyaphazi Zulu and Martin Brockerhoff, Sub-saharan African, 2003	Dependent Variables: unplanned births, antenatal care and delivery care. Independent variables: economic wellbeing and residence while controlling for age, parity and education level	-Examine whether maternal health of urban women compared to rural women, have any significant differentials within urban areas and whether some urban women have worse maternal care than rural women.	-multivariate: binomial logistic regression model and multi level logistic regression models	-Pooled DHS data of 23 countries in Sub-Saharan Africa	-poverty reduces possibility of seeking maternal healthcare among rural residents, - The urban poor seeking antenatal care later than the non-poor urban residents and receive non-professional delivery care. - even though the urban residents record higher unplanned births, receive professional delivery care, visit health facilities more for antenatal care than rural residents, there is no significant evidence that they initiate antenatal care earlier, despite their closer physical proximity to health services. - Improvements in maternal health care in some countries of sub-Saharan Africa have been of least benefit to the urban poor.
14	Phyllis Machio, Kenya, 2008	dependent variables; use of antenatal services, postnatal services, skilled delivery care, number of antenatal visits, timing of antenatal	-investigate factors that influence use of various maternal healthcare services in Kenya	-probit models -poisson regression count model -multinomial logit	-KDHS 2003	- education level of the mother, wealth index, education level of the husband, working status of the woman, place of residence, marital status, and age of the woman, birth order and region influence the use of antenatal services,

		visits. The explanatory variables;age, household size, birth order, wealth index, working status, residence, educational level of the husband, marital status of the woman, Religion and the Region of origin				-higher educational level and working positively influence use of postnatal care services in Kenya. -- Use of Skilled delivery care is influenced by education level of the woman, education level of the husband, wealth of the household, household size, age of the woman, place of residence, marital status and religion. -Age of the mother, being divorced, living in rural areas, and living in Coast, Western and North eastern province negatively influences use of skilled delivery care.
15	Rosemary Chepkoech, Kenya, 2003	Employment status Income Family size Age Marital status Husband's income Cost of services	-investigate the determinats of utilization of antenatal and delivery care services in Nairobi slums -assess the importance of the factors affecting choice and utilization of antenatal and delivery care services	-Binary logit -multinomial logit	- primary data	- employed women are more likely to use maternal health care services than the unemployed, -income has no effect on utilization of maternal healthcare services except in the long run. -Contrary to other studies, family size and age of the woman do not influence the utilization of services. -Married women are less likely to use maternal health care services compared to their unmarried counterparts. - Mother's education is key in determining the utilization of

						maternal health care services in Nairobi slums. -Income of the husband influences use of antenatal and in delivery care. - The cost of services reduces the level of utilization of maternal health care services.
15	Njaramba Kenya, 1994	-distance -Cost of services -experience(parity) -Insurance -Quality of service -maternal education -Employment status -marital status	-determine the pattern of utilization of antenatal care services in Kiambu District. -estimate the factors that influence the level of antenatal care use in Kiambu district .		- primary data	- Distance and cost of health services reduces demand for antenatal care. -Experience as measured by the number of children previously born reduces the number of visits a mother makes to the clinic. -Insurance and quality service provided during the clinic visits positively affect the number of visits. - Maternal education increases and income grows over time more women seek antenatal care. -Women on permanent employment have a higher level of utilization of the services than casual works and housewives. -married women tend to visit clinics more times than unmarried women, as well as age and family size.

16	Japhet Awiti , Kenya, 2002	-patient's age -gender -marital status -highest education level	-determine the personal and social-economic characteristics of a patient that are important in his choice of health care facility type. -the effects of factor on the of a facility type	Multinomial logit	Primary data	- choice of a facility type was dependent on the patient's age, gender, marital status and highest education level. Younger patients, male, married, and less highly educated sought treatment from dispensaries and health centres while older, unmarried, highly educated and female patients sought treatment from hospitals and clinics. Generally, patients were found to be more likely to visit a health centre than any other facility when ill
17	Muligwa , Kenya, 2002	-Household characteristics (education level), -type of sickness, -Quality of service, -visits to private facilities -no care	- analyze the factors that influence the demand for health care services in Kenya	discrete and continuous regression analyses models	Primary data from third welfare monitoring survey (WMS III)	- prices of health care services, distance to the facilities, education levels of household head and the quality of the services are the main determinants of demand for healthcare in the public facilities. -In private health care sub-sector, the main determinants were found to be prices, quality of service, education level of household head, and income of the household. -The persistence and severity of the sickness (as measured by the days a person missed work due to illness) and prices determine the number of visits to the health facilities

APPENDIX II: Multinomial Logistic Regression Results:Changes in Probit Index

VARIABLES (Reference Category in Parenthesis)	Public	Private
Age at First Birth	-0.00106	0.00793
	(0.0162)	(0.0231)
Parity	-0.212***	-0.323***
	(0.0324)	(0.0529)
Age Category (15-19)		
20-24	0.0200	0.0695
	(0.191)	(0.313)
25-29	0.225	0.345
	(0.210)	(0.341)
30-34	0.335	0.968**
	(0.241)	(0.381)
35-39	0.499*	1.076**
	(0.284)	(0.444)
40-44	0.914***	2.244***
	(0.336)	(0.502)
45-49	1.219***	1.975***
	(0.437)	(0.683)
Working Status (not Working)		
Working	0.253***	0.122
	(0.0800)	(0.123)
Women's Education Level (No education)		
Primary	0.574***	0.795***
	(0.141)	(0.280)
Secondary	1.199***	1.199***
	(0.171)	(0.310)
Higher	1.854***	2.661***
	(0.338)	(0.427)
Husband's Education Level (No education)		
Primary	0.601***	0.778**
	(0.159)	(0.358)
Secondary	1.016***	1.675***
	(0.171)	(0.364)
Higher	1.070***	2.084***
	(0.233)	(0.400)
Residence(Rural)		
Urban	0.909***	1.074***
	(0.111)	(0.149)
Religion (Christian)		
Muslim	0.197*	-0.166
	(0.117)	(0.195)
No religion	-0.293	-0.138

	(0.274)	(0.517)
Income Level (Poor)		
Middle	0.627***	0.321
	(0.100)	(0.198)
Rich	0.822***	1.146***
	(0.103)	(0.170)
Final say on Woman Healthcare (Woman Alone)		
Woman and partner	0.159	0.193
	(0.105)	(0.160)
Partner alone	0.0919	0.416**
	(0.113)	(0.177)
Someone else	15.27	15.67
	(2,609)	(4,531)
Final say on Making Large Household Purchases (Woman Alone)		
Woman and partner	-0.146	-0.0781
	(0.139)	(0.215)
Partner alone	-0.337**	-0.383*
	(0.137)	(0.217)
Someone else	-0.219	-16.94
	(1.135)	(2,075)
Final say on making Daily Household Purchases (Woman Alone)		
Woman and partner	-0.0549	-0.141
	(0.0978)	(0.144)
Partner alone	0.229**	0.0887
	(0.112)	(0.182)
Someone else	0.190	1.454
	(0.763)	(0.915)
Final say on Family Visits (Woman alone)		
Woman and partner	-0.0904	0.144
	(0.106)	(0.162)
Partner alone	-0.165	-0.0953
	(0.114)	(0.184)
Someone else	0.549	-0.289
	(0.646)	(1.222)
Final say on Control of Finances		
Woman and partner	-0.167	-0.354
	(0.156)	(0.255)
Partner alone	-0.177	-0.0740
	(0.152)	(0.250)
Someone else	-32.22	-16.77
	(3,246)	(3,474)
Constant	-1.708***	-3.991***
	(0.401)	(0.671)
Observations	4,800	4,800
Standard Errors in Parentheses *** p<0.01, ** p<0.05, * p<0.1		