FACTORS INFLUENCING UNSKILLED DELIVERY IN KENYA

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DECLARATION

I declare that this project is my original work and that it has not been submitted for examination in any other University.

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

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DEDICATION

I dedicate this research paper to my parents, James M. Ndalame and Margaret M. Mulinge for moulding me into the person I am; and to my wife, Cecilia Mueni for urging me to press on throughout this process and for her support.

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ABSTRACT

Maternal deaths are still a big problem in the developing nations when compared to the developed world, at 437 deaths and 12 deaths per 100,000 live births respectively (PRB, 2016). Kenya has had no substantial reduction in maternal deaths in the last decade. The Kenya Demographic and Health Surveys reports of 2008-09 and 2014 reported maternal mortality ratios (MMR) of 488 and 362 deaths per hundred thousand live births respectively (KNBS & ICF Macro, 2010; KNBS&ICF International, 2015). Findings for developing world have found that use of skilled care for ANC and delivery services can greatly bring down the number of maternal deaths (Gabrysch and Campbell, 2009; Edmonds, 2010). Why are pregnant mothers seeking ANC services in high numbers while the same high numbers are not delivering under the care of skilled birth attendance? Why does this gap still exist, resulting into high numbers of maternal deaths? The study seeks to determine factors that influence the use of unskilled birth attendance during delivery in Kenya

The main objective of the study is to determine the factors associated with use of unskilled delivery in Kenya. Specific objectives are: To establish demographic; socio-economic; health service and socio-cultural factors influencing use of unskilled delivery in Kenya.

Understanding t individual characteristics of women who use unskilled birth attendance is important to inform key priority areas for policy change and interventions especially specific to such groups of women.

The data of the study was obtained from the2008-09 Kenya Demographic and Health Survey. The study was conceptualized within the "attitudes, social influence and self-efficacy (ASE) model", adapted from Amooti-Kaguna and Nuwaha (2000). Methods of data analysis employed were descriptive statistics, cross tabulations and binary logistic regression.

The study variables analysed were: maternal age, birth order, maternal education, wealth index, place of residence, number of ANC visits, ever use of contraceptives, and region of residence. The bivariate analysis results showed that all the variables were significantly

associated with the use of unskilled delivery. However, the logistic regression results showed that only maternal age did not have effect on the use of unskilled delivery.

The study recommends the governments and other non-state actors to ensure girls stay longer in school to complete their secondary education; the County Governments in Kenya to ensure full implementation of the Community Health Strategy and have the Community Units functional and sustainable and conduct more qualitative research to establish cultural barriers hindering access of delivery services by mothers.

CHAPTER ONE: INTRODUCTION

1.1 Background

Maternal deaths are still a big problem in the developing nations when compared to the developed world, at 437 deaths and 12 deaths per 100,000 live births respectively (PRB, 2016). About 536,000 maternal deaths occurring every year are attributed to pregnancy and delivery complications worldwide and these deaths mainly occur in countries in Africa and South Asia, and of these 87% of the deaths occurred in these regions in 2008 (UN MDGs Report, 2011). Majority of sub-Saharan Africa maternal deaths occur due to birth complications relating to lack of skilled attendance at delivery (Mwangome et al, 2012). Maternal health was brought to the limelight in 1987 in Nairobi, when the Safe Motherhood Initiative was adopted by the international community (Titaley et al, 2010). The programme was formulated for women to have pregnancies and child birth periods without complications. Maternal health was again reiterated following its inclusion as one of the Millennium Development Goals, where 189 nations signed the Millennium Declaration, where proportions of births delivered under the care of skilled service providers became a gauge in monitoring the progress of maternal health programmes (Palamuleni, 2011).

In Kenya, as per the report of Kenya Demographic and Health Survey of 2014, maternal mortality ratio stands at 362 deaths per 100,000 live births (KNBS & ICF International, 2015). This is a very slight improvement compared to the preceding the same survey report of 2008-09 as maternal mortality ratio stood at 488 per hundred thousand live births – later the ratio was adjusted to 520 deaths per hundred thousand live births in the 2014 KDHS report, to be in line with the ratio of 2014 report since the ratio initially measured seven years preceding the survey instead of five years (KNBS & ICF Macro, 2010; KNBS & ICF International, 2015). However, the slight change in the proportion of maternal deaths cannot be concluded as a significant change of improvement.

Kenya has been committed to improve the quality of lives and the well-being of her people. In this regard, the country has been formulating and implementing policies and programmes relating to the maternal health that have been integrated into the larger maternal, newborn, child and adolescent health. The International Conference on Population and Development (ICPD) that took place in 1994 at Cairo, Egypt came up with a resolution that was endorsed by many countries, Kenya included. Part of the way forward was an action plan - The ICPD 'Programme of Action' which partly stated that; "all countries must expand the provision of maternal health services … All births should be assisted by trained persons, preferably nurses and midwives, but at least by trained birth attendants" (UN, 1995).

In Kenya, policies, strategies and service delivery standards exist that guide maternal and new-born programmes among other health programmes. These are: National Reproductive Health Policy 2007 (GoK, 2007) that was developed to bring about equity and efficiency in providing reproductive health services that are of high quality; National Reproductive Health Strategies of 1997-2010 and 2009-2015 (GoK, 1997; GoK, 2009); and Kenya National Maternal and Newborn Health 2010 Road Map (MoH, 2010). Specifically, this Road Map was created to step up the pace in reducing maternal deaths as well as those of the newborns in the country towards the attainment of the fifth Millennium Development Goal (MoH, 2010). However, despite all these policies and implementation strategies being in place, maternal deaths reduction in Kenya is very slow. The pace at which maternal deaths are declining in Kenya is very slow compared to other age cohorts' specific death rates such as infant and under-five mortality rates.

The "proportion of births attended by skilled attendants is the second indicator besides the maternal mortality ratio of measuring the third Sustainable Development Goal's target 3.1 that calls for reduction of maternal mortality ratio by the year 2030 to less than 70 deaths per 100,000 live births" (UN, 2015).

During delivery, skilled medical care and hygienic environment can largely bring down the risk of mothers been infected as well as to their newborns. There is need to avoid complications during delivery. This can greatly be achieved by seeking skilled delivery care alongside emergency care interventions. Generally, it has been established that "births supervised by skilled attendants greatly reduces maternal deaths" (WHO, 2004). As observed by Seljeskoog et al. (2006), early identification of obstetric complication is important to save life, as majority of deaths occur during delivery. In addition, they observed that the prediction of risk of birth complications at the time of antenatal visits is relatively low compared to the time of delivery (Seljeskoog et al., 2006). It has been found that, high numbers of deaths happen during the first day after delivery, which calls for the presence of skilled professionals at that crucial time (Abebe et al., 2012).

The World Health Organization (WHO), defines "a skilled birth attendant" as "a health professional such as a nurse, mid-wife or a doctor who have been trained on proficiency in skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" (WHO, 2004). It has been found that when a delivery is assisted by a professional, "complications that occur such as heavy bleeding can be prevented and managed or the patient referred to a secondary or specialized health facility for care when in need" (Mengesha et al, 2013). On the other hand, deliveries occurring at home either under care of traditional birth attendant (TBA), relatives or friends (who are independent of the health system) or a mother delivers on her own are all categorized as unskilled delivery (WHO, 2004).

1.2 Problem Statement

Non-skilled birth attendants (community health workers, traditional births attendants whether trained or not, relatives or friends or and assistance from no one) are probable to offer delivery services that do not meet the professional thresholds of delivery care. These deliveries are "most likely to be under unhygienic conditions and when professional attention is needed it is often too late" (Amooti-Kaguna and Nuwaha, 2000; WHO, 2004). Some of "these deliveries have been linked with infant and maternal deaths" (Abebe et al, 2012). Majority of sub-Saharan Africa maternal deaths have been associated with complications at delivery time which unskilled birth attendants are not able to address, with infection during delivery accounting for ten percent of the maternal deaths (Mwangome et al., 2012).

Kenya has had no substantial reduction in maternal deaths in the last decade. The Kenya Demographic and Health Surveys reports of 2008-09 and 2014 reported maternal mortality ratios (MMR) of 488 and 362 deaths per hundred thousand live births respectively (KNBS & ICF Macro, 2010; KNBS & ICF International, 2015). The MMR as reported in 2008-09 was later revised to 520 deaths per hundred thousand live births as recorded in KDHS 2014 report (KNBS & ICF International, 2015). The MMR as reported in the 2008-09 Kenya Demographic and Health Survey report was for the seven years preceding the survey. The adjustment of the ratio number to 520 deaths was to standardize it to cover five years same as reported in the 2014 Kenya Demographic and Health Survey report. Findings for developing countries have found that use of skilled care for ANC and delivery services can greatly bring down the number of maternal deaths (Gabrysch and Campbell, 2009; Edmonds, 2010). Why is there still a very big gap when comparing maternal mortality ratios of the more developed world to least developed countries long after the initiation of safe motherhood in 1987 and thereafter the roll out of policies and implementation programmes? Population Reference Bureau in 2015 reported a MMR of the more developed world at 12 deaths per

hundred thousand live births compared to 437 deaths among the least developed, indicating even a higher MMR in African countries, south of Sahara at "557 deaths per 100,000 live births" (PRB, 2016).

Kenya has adequate maternal health policies and implementation strategies in place. However, maternal health in Kenya is fairing worse when comparing reduction in maternal deaths to other age cohorts' death rates such as infant and under-five mortality rates. As per 2014, "infant death rate was 39 deaths per 1,000 live births compared to 67 deaths per 1,000 live births in 2003" (KNBS & ICF Macro, 2010; KNBS & ICF International, 2015); and for "the under 5 mortality level stood at 52 per 1,000 live births a decrease from 95 in 2003" (KNBS & ICF Macro, 2010; KNBS & ICF International, 2015).

The 2008-09 Kenya Demographic and Health Survey report shows the antenatal clinic (ANC) attendance was relatively very high at 92% compared to only 44% of skilled delivery (KNBS & ICF Macro, 2010). This means that more than half of births that occurred were not supervised under skilled birth attendance. The same is reflected in the 2014 Kenya Demographic and Health Survey report where ANC attendance was at 96%, but delivery under skilled care improved to 62% (KNBS &I CF International, 2015). Skilled delivery care is positively associated with lower maternal deaths since service providers can handle or refer cases of emergency and have sufficient and appropriate equipment (Bazant et al, 2009; Lerberg et al., 2014).

Controlled environment, hygienic conditions and skilled personnel to manage possible complications are considered the cornerstones for achievements of maternal and new-born health (Doctor and & Dahiru, 2010). To reduce maternal deaths, deliveries supervised by skilled attendants have been found to work to achieve desired results (Mengesha et al., 2013) and is one of the Sustainable Development Goal (SDG) indicators to track national efforts towards SDG 3 on reduction of maternal mortality (Al Kibria et al., 2017). Seeking

professional assistance during delivery is considered critical to reducing maternal deaths, as when abnormalities and complications are identified in time it averts deaths and disabilities (Seljeskog et al., 2006). A review to establish causes of deaths during delivery across the world, excessive bleeding immediately after birth was found to be the leading cause, at 33.9 % in African countries, that is the highest compared to other continents (Khan et al., 2006).

Why are pregnant mothers seeking ANC services in high numbers while the same high numbers are not delivering under the care of skilled birth attendance? Why does this gap still exist, resulting in high numbers of maternal deaths? Skilled birth attendance services are underutilized even in places where skilled attendants are available (Letamo and Rakgoasi, 2003). The study seeks to determine factors that influence the use of unskilled delivery by women of child bearing age in Kenya. Understanding the characteristics of women who are not delivering under the care of skilled attendance is important to inform interventions specifically geared to such groups of women. Findings can inform future policies and maternal health programmes.

1.3 Research Questions

The study sought to answer the following questions.

- What are the demographic factors influencing use of unskilled delivery in Kenya?

- What are the socio-economic factors influencing use of unskilled delivery in Kenya?

- What are the health service factors influencing use of unskilled delivery in Kenya?

- What are the socio-cultural factors influencing use of unskilled delivery in Kenya?

1.4 Objectives of the Study

The main objective of the study was to determine the factors associated with use of unskilled delivery in Kenya.

The study had the following specific objectives:

i).   To establish demographic factors influencing use of unskilled delivery in Kenya.

ii).   To establish socio-economic factors influencing use of unskilled delivery in Kenya

iii).   To establish health service factors influencing use of unskilled delivery in Kenya

iv).   To establish socio- cultural factors influencing use of unskilled delivery in Kenya

1.5 Justification of the Study

As observed by Chowdhury et al. (2013), most deliveries happening taking place at homes in rural Bangladesh under the care of traditional birth attendants, are the main cause of these deaths. Kowalewski et al (as cited by Abebe et al, 2012) observe that many African mothers, as has been identified in studies across the continent, desire to give birth under the care of trained attendants. However, most of these mothers end up in the hands of unskilled attendants, with some of these attendants drawn from the family members at home. As it has been cited in many studies, deliveries supervised by trained professional medics such as doctors, nurses and midwives are associated with desired maternal outcome, hence reducing deaths of mothers (Anyait et al., 2012; Mengesha et al., 2013; Kitui et al., 2013; WHO, UNICEF, UNFPA, WBG 2015). This clearly indicates that delivery under unskilled attendant is linked with maternal deaths and sickness. As majority of maternal deaths occur during delivery, if complications are identified early in labour it very important to saving lives. On the other hand, it is very hard to identify or predict with certainty any risk cases during ANC visits that might develop complications later during delivery (Seljeskog et al., 2006).

Letamo and Rakgoasi (2003) in their study in Botswana, sought to establish issues inhibiting the use of skilled maternal services so that appropriate actions could be

taken to remove barriers. Similarly, this study sought to establish factors influencing use of unskilled delivery by child bearing age women in Kenya. The relatively high rate of antennal care attendance by pregnant women in the country, is not being actualized during delivery. Understanding characteristics of individual women who use unskilled delivery is important to inform key priority areas for policy change and interventions specifically to such groups of women. By doing this, maternal complications during birth and deaths could greatly be brought down, in the entire country and hence be on the right path towards attaining the "target 3.1 of the Sustainable Development Goal (SDG) 3; of reducing the maternal mortality ratio to less than 70 per 100,000 live births: (UN, 2015); and the Kenyan population policy target of "reducing maternal mortality ratio to 200 deaths per 100,000 live births" (GoK, 2012).

1.6 Scope and Limitations of the Study

Data for the study was drawn from the 2008-09 Kenya Demographic and Health Survey specifically from the women's questionnaire. This was a "nationally representative survey interviewing 8444 women aged 15 - 49 years in Kenya" (KNBS & ICF Macro, 2010). The analysis of the data was based on the latest birth occurring five years before the survey was conducted. The last birth cases were 4082. Of these, the study focuses on the 2131 births delivered under unskilled birth attendance.

However, some limitations have been identified in the study. Child birth information and type of assistance during delivery were recorded retrogressively as collected from the mothers. There was a high likelihood of not recalling the details accurately. Mothers who had given birth 5 years preceding the survey might not recall whether the person who offered birth assistance services was qualified professional or not. To address and minimize a potential for recall bias, data of the latest birth preceding the survey was used.

Wealth index, place of residence, as well as region of residence variables "indicate the condition and situation at the time of survey and not as per the conditions during delivery" (Kitui et al, 2013). During survey time, the women might had moved from say one variable group to another. For example, the household assets and type of housing and its characteristics might have been lost or acquired others or the housing situation deteriorated or improved. This might not have been the true state during delivery time as opposed to the date of the interview. Such fluctuations might affect the observed associations between and among various variables. The assumption made here is that the status remains the same.

Another shortcoming relates to the use of "maternal mortality ratio" as a measure of "maternal health status" progress as captured in the periodic Demographic and Health Surveys. The ratio might over or under estimate the actual situation existing as it exists in a given population. The ratio estimation rather gives a probability of maternal deaths that might occur than the ration been the reality existing in a population.

Recommendations of the study might be limited to some extend for current application since the survey data used in the study relates to the five years preceding 2008-09 when the data was collected.

Since the study relied on secondary data, its findings were limited to the characteristics of the data collected that is more quantitative. Other aspects like the belief systems, perceptions and attitudes of mothers that might offer more explanations are not available.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section presents a review of the literature on studies that have been carried out on unskilled delivery. The first part focuses on important theoretical perspectives and how they are related to the distant factors to use of non-skilled attendance. The second part looks at the major demographic, socio-economic, health service and socio-cultural factors influencing the use of unskilled delivery in Kenya. Both conceptual and operational frameworks are described in the third part.

2.2 Theoretical Perspective

The theoretical perspective highlights the safe motherhood framework by Charlotte Warren and Wilson Liambila (2004) which is an advanced version of James McCarthy and Deborah Maine (1992) frame work on analyzing maternal morbidity and mortality. Closer to the subject matter, the study looks at the postulations of Edmonds et al (2012) on application of Network-Episode Model (NEM) on women's social networks and birth attendance decisions on one hand and Amooti-Kaguna and Nuwaha's "Attitudes, Social influence and Self-efficacy - ASE model" (Amooti-Kaguna and Nuwaha, 2000) type of assistance to choose during delivery.

Warren and Liambila utilized the original framework by McCarthy and Maine's for a demonstration project on safe motherhood in western Kenya. Both frameworks analyses cultural, social, economic and behavioural factors influencing maternal morbidity and mortality. Warren and Liambila's framework analyzes the effect of the results either to have; mothers who are healthy including their newborn babies or maternal sickness and deaths.

The safe motherhood framework has the determinants into three categories; proximate, intermediate and contextual determinants (Warren and Wilson Liambila, 2004).

Closest to the outcome are the proximate determinants. This group of determinants entails pregnancy, development of a pregnancy complication and management of pregnancy complications during labour, delivery and post-partum period (Warren and Wilson Liambila, 2004). The proximate determinants are because of intermediate determinants as: first, "access to wide range of services (access or barrier to the health care systems, finance and information)"; secondly, "reproductive health behaviour (health seeking behaviours by women for a continuum of maternal health services and traditional practices have largely been shaped by cultural and social norms)"; and thirdly, "women's health and nutritional status". Background determinants are at the "greatest distance from maternal health outcomes" (Warren and Wilson Liambila, 2004). According to the framework, these background factors are grouped as "political will and commitment; functional Infrastructure for transportation proper sanitation and communication; and women's socio-economic well-being" (Warren and Wilson Liambila, 2004).

The second theoretical perspective is the "Network Episode Model (NEM)". Edmonds et al., (2012) argued that the "Network-Episode Model, a dynamic conceptual framework of healthcare utilization and compliance, was adopted from decision-making, social exchange and social network theory" A study they conducted in Matlab, Bangladesh, Edmonds and colleagues sought to establish the relationship between women's social networks and the utilization of skilled birth attendance during delivery for "pregnancies that had no complications". They applied the Network-Episode Model to figure out "if strength of ties and kinship density" that are variables related to structure of the network on one hand and the network content (approval for or against the type of attendance) during delivery; whether it explained the kind of attendance used by the women "deviated from the women's own individual characteristics" (Edmonds et al., 2012).

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According to this model, "a women's interactions within the social networks formed the fundamental process through which decisions related to health events occurs and that these interactions are shaped by network's ties and kinship cohesion and endorsement" for use or non-use of skilled attendance (Edmonds, 2010; Edmonds et al., 2012). This model places an individual such as an expectant mother's decision about unskilled delivery use within the context of social interactions. The model combines "three different yet interrelated components of decision-making, health seeking behavior and health care utilization". They stated that "lay decision-making involves the study of how people make judgments and choices in natural settings", including the analysis on choice of their behaviour. Health-seeking denotes to seeking services or remedies for a specific service, ailment or illness either through formal or informal supports, including family, kinship networks, friends, traditional healers and/or religious leaders.

Their hypothesis was that networks with high strength of kinship density had a norm that in these networks they expected their members to adhere to it. The alternative of their thinking was that "women in networks that are loosely held and with ties that are weaker, were less likely" to adhere to suggestion offered by the network on the type of attendance to use during delivery (Edmonds et al., 2012). Their findings in Matlab, Bangladesh demonstrated that the type of birth attendance during delivery is as per the network content i.e. endorsement for or against type of assistance during delivery either skilled or non-skilled and not through network structure that is density of kinship and ties.

The third theoretical perspective is that of Amooti-Kaguna & Nuwaha (2000). A study they carried out in Rakai District of Uganda, was formulated to realize the factors that influence in choosing where to deliver – home deliveries been associated with unskilled attendance, whereas institutional (hospital) deliveries being associated with skilled birth attendance. The study aim was to "investigate the role of psychosocial factors, such as

attitudes, social influence and self-efficacy in influencing individuals on choice of place of delivery" (Amooti-Kaguna & Nuwaha, 2000). They observed that individual determinants are the ones that are directly related to utilization of health care services when compared to societal or system determinants.

The model referred to as "ASE-model" can be employed to predict behaviour by individuals. "In the ASE-model, behaviour such as choice of delivery site is a result of behaviour intention" (Amooti-Kaguna & Nuwaha, 2000). "Self-efficacy is the belief in a person that he/she has an ability to perform certain behaviour" despite facing barriers of performing the same. "Social influence depends on adherence of social norms" by an individual. For example, do mothers-in-law or husbands approve or disapprove of their daughters-in- law or wives respectively to skilled or non-skilled delivery care? An individual's feeling towards performing a certain behaviour is because of the perceived outcome that the individual expects in doing so. These consequences can be perceived as positive or negative. The ASE-model implicates "that a person's health behaviour can be changed by changing her attitudes, her perception on people who approve or disapprove and her self-efficacy expectations" (Amooti-Kaguna and Nuwaha, 2000).

Even though the safe motherhood framework gives a demographic perspective to maternal mortality, it is most suited when analyzing the larger context of the whole maternal health care services and outcomes leading to healthy women, maternal disabilities and deaths. The short-coming of the "Network Episode Model (NEM)" is that people tend to misinterpret other people's feelings and behaviours as being closer to their own feelings and behaviours as well than they might be in actual sense. Therefore, the view that members' approval of the network using or not using unskilled care might portray the women's behaviour rather than the feelings of the other members in the network. The ASE-model weakness is that it is only

used to identify beliefs that are thought to be important to influence the choice of the type of assistance during delivery – either skilled or non-skilled.

2.3 Demographic Factors and Unskilled Delivery

Demographic factors do influence unskilled attendance in Kenya. Demographic factors to be reviewed are maternal age and birth order.

2.3.1 Maternal Age

Age might denote experience for utilization of various medical care services (Gabrysch and Campbell, 2009). In numerous studies of on analysis of elements influencing use of delivery services, Gabrysch and Campbell found that age had no consequence on rate of utilizing skilled care amongst women of different age groups (Gabrysch and Campbell, 2009). Aged women believe in themselves and have a great influence in households' decision making than younger women. However, as they observed, aged women might hold the traditional views and thus are more inclined to use unskilled delivery care than younger women (Gabrysch and Campbell, 2009).

In Malawi, young females of 15 -24 years of age were likely to seek services from traditional birth attendants (TBAs) compared to women above 35 years (Palamuleni, 2011). The same was also observed in Northern Nigeria. Women aged below 34 years were most likely to have reported assisted by unskilled attendants at delivery compared to their counterparts at 35 years or older (Doctor and Dahiru, 2010). This contrasts with women in Kenya who are aged above 35 years that are more prospective not to deliver at health facilities either under care of TBAs, relatives, friends or on their own (Kitui et al., 2013).

2.3.2 Birth Order

From the literature reviewed, skilled care is utilized in high proportions for the women's first and second borns compared to fourth borns or higher.

In Jhang, rural Pakistan, delivery assisted by non-skilled attendants varied with the birth order (Agha and Carton, 2011). Most women had their first childbirth assisted by skilled birth attendant, with subsequent births occurring at home under the care of non-skilled attendants. The same can be said of Northern Ethiopia where birth order can predict the non-use of delivery care by women. A higher birth order has a higher chance that it might have been supervised by unskilled attendant (Worku et al, 2013).

In Busia District of Uganda and in Malawi, mothers of four or more births are most likely to deliver under the care of non-skilled attendance (Anyait et al, 2012) while women with fewer children, one or two might not deliver under non-professional care when equated with their counterparts with three or higher children to have ever been born (Palamuleni, 2011). In Kenya, a trend of decreasing health facility delivery assisted by skilled attendants was witnessed with increasing birth order (Malderen et al, 2013; Kitui et al, 2013). Women of higher birth order in India did not find it important to receive professional delivery if previous births did not have complications (Gabrysch and Campbell, 2009).

However, in Bahir Dar, Ethiopia birth order was not found to have significance with the kind of assistance during delivery (Abebe et al, 2012). Also in Rakai District of Uganda, birth order was not found to be significant same as in Northern Nigeria (Amooti-Kaguna, 1999; Doctor and Dahiru, 2010). On the other hand, women in rural China were deterred by the one-child-policy and opted to use unskilled care for fear of being reprimanded (Gabrysch and Campbell, 2009).

2.4 Socio-Economic Factors and Unskilled Delivery

Socio-economic factors to be reviewed are maternal education, place of residence, and wealth status.

2.4.1 Maternal Education

Education level is very key of whether to seek skilled or non-skilled delivery care. Education empowers women such that when they become mothers, they are self-sufficient to make decisions on their own regarding their own health including that of their children (Palamuleni, 2004). Education of the mother has been found to have a positive relationship on use of skilled attendance in most studies conducted in the African setting with women who have no education being highly predictive of a home delivery (Gabrysch and Campbell, 2009).

In Ethiopia, women who had home deliveries are illiterate or had incomplete primary education (Abebe et al., 2012). Those who delivered at home were "76.9% and had no education when compared to 11.1% who had at least primary education "(Abebe et al., 2012). A similar study done in Ethiopia, found that women who are "better educated had a higher likelihood of better understanding the importance of using skilled delivery care when equated to women with less education level and that women with secondary level education or higher were more than two times likely to deliver under skilled care than those with no education at all" (Mengesha et al., 2013).

Women who are educated might have their own say on health care matters and greatly value their well-being. Likewise, mothers who are educated are full of confidence when they visit health facilities and interacting with service providers and might even have the will to seek services far away from home (Palamuleni, 2011).

However, education of mothers was not found to be significant in south-western Uganda but rather that of their husbands (Amooti-Kaguna and Nuwaha, 1999).

2.4.2 Place of Residence

Both rural and urban areas exhibit very different social and service delivery conditions. The same is obviously expected in respect of delivery services use. Place of residence might be associated with other underlying confounding factors such as the purchasing power, education level of the mother, birth order, ethnic background, belief system, access to information and services and accessibility of the same (Gabrysch and Campbell, 2009).

In Kenya, "rural households were two times more likely to seek utilization of unskilled delivery when compared to those in urban areas". However, this effect faded when other variables were controlled (Malderen et al, 2013). In rural Ethiopia, "mothers were more likely to utilize non-institutional services when compared with their urban counterparts" (Abebe et al, 2012). Rural mothers have limited resources, for example, to enable them pay for transport costs and access delivery services. Women from rural Yobe in Northern Nigeria are positively associated with unskilled care during delivery. This is because the "rural areas of Yobe are limited with access to health facilities compared with the urban areas" (Doctor and Dahiru, 2010).

In rural Malawi, "women easily practice as is expected by their community's norms and traditions regarding their health care" (Palamuleni, 2011).

There is a strong association between wealth status of individuals in comparison to their place of residence either urban or rural, in that in this relationship, there is underlying economic factors. Economic factors are important for rural areas who face inequalities in place of delivery (Kitui et al., 2013). "The opportunity costs of women in rural areas to deliver under the care of skilled attendants increases the odds of delivering under unskilled attendants, hence making the latter cheaper. Costs regarding transportation to hospital

become important considerations especially having low perception of need of skilled delivery care" (Kitui et al, 2013).

2.4.3 Wealth Status

Poor women in Malawi were found to be "6 times more probable deliver at home or homes of TBAs (3.55 times) when compared with rich women" (Palamuleni, 2011). On the other hand, "women in the middle level category were 4.68 and 3.1 times more likely to deliver assisted by TBAs respectively when compared with rich women" (Palamuleni, 2011).

In Kenya women who are poor might indirectly increase the odds of home delivery. Home deliveries in rural Kenya are considered to be cheaper by the mothers where health facilities are widely dispersed. "The transport costs as well as maternity fees and other allied costs can be barriers to use of skilled birth attendance" (Kitui et al, 2013). In another study in Kenya, use of non-skilled attendance was inversely proportional with the household wealth quintile. Skilled care birth attendance coverage was" 4 times more the top most quintile than the lowest" (Malderen et al., 2013). Women from poor households' face hinderances to use of delivery services. These include poor transportation system, maternity fees and related costs, women in informal settlements feeling insecure at night or weighty facility procedures like ascertaining of ANC attendance (Malderen et al., 2013).

Women who are not in gainful employment might not be able to save and have higher chances of delivering with assistance from unskilled delivery. Communities with low economic progress are more likely not to be sophisticated and their women have less independence and have low opinion towards skilled attendance use. Costs and distance from a health facility go together with longer distances entailing higher transportations costs (Gabrysch and Campbell, 2009). In reviewing literature on factors that influence use of skilled delivery, Gabrysch and Campbell found that most qualitative studies had mentioned costs as a major hindrance to formal delivery care. Traditional birth attendants are perceived

to be more affordable, such that even payments can be negotiated in terms of amount of time for repayments as well as mode of payments that does not necessarily has to be in cash.

Women whose husbands are of low status occupations were more probable to be assisted by unskilled attendant. Occupations deemed to be of low status are associated with poverty, therefore making it difficult for the household to cater for transport and hospital charges (Gabrysch and Campbell, 2009). Same as in Uganda, women whose husbands were peasants, traditional birth attendants assisted them (Amooti-Kaguna and Nuwaha, 1999).

From the above review, being of a low economic status is a major factor to likely seek the services of a non-skilled birth attendant during delivery.

2.5 Health Service Factors and Unskilled Delivery

The demographic, socio-economic and socio-cultural factors can work either directly or indirectly through the health service factors to influence the use of unskilled delivery.

2.5.1 Use of ANC

ANC can be viewed as an entry point to provide opportunity to promote a wide series of reproductive health services such as use of skilled delivery care. Risk assessment during pregnancy is performed and women informed of the progress. Pregnant women who make visits to antenatal clinics "are more likely to be assisted by skilled service providers" and put it as part of the birth plan (Gabrysch and Campbell, 2009; Al Kibria et al., 2017). In rural Bangladesh, expectant women who might have made less visits to the antenatal clinic as is required "were most likely to use unskilled delivery" (Chowdhury et al, 2013; Yadav et al., 2015). During antenatal care clinic visits, women might familiarize themselves with the health system, understand their progress of their pregnancy, any danger signs to be aware of and appreciate the outcomes of delivering under the care of the health professionals (Chowdhury et al, 2013).

In urban slums of Nairobi, women who were informed that their pregnancy is progressing well, "might not see the need to visit the health facilities manned by skilled care since they do not foresee any complication" (Izugbara et al., 2009). On the other hand, in Uganda, health service providers mistreatment of expectant women at time of admission for women without possession of ANC cards as evidence of full compliance for antenatal visits, discourages these women in future and their peers to deliver under the care of skilled attendance prevents them admission for delivery services (Amooti-Kaguna, 2000). In Ethiopia, a study established that women making their first ANC visit after the first trimester has past were likely to deliver at home (Mengesha et al., 2013). The same has been observed in Kenyan women who attend fewer ANC visits than recommended (Malderen et al, 2013; Worku et al, 2013). In Malawi, women who had no prenatal visits were 4.7 times and 2.3 times to deliver at home and assisted by TBAs respectively when compared to women who had at least four visits during ANC (Palamuleni, 2011). However, contrary to the above findings, the time for the first antenatal care clinic visit did not have an effect of the place delivery or the assistance sought (Anyait et al., 2012).

ANC attendance in Kenya is reported to be relatively very high, however, there doesn't not occur a connection of the proportions of women who utilize the subsequent services, that is, delivery and postnatal (KNBS & ICF Macro, 2010; KNBS&ICF International, 2015). Fifteen percent of women are the ones to have been found to adhere to the requirement of making their ANC visit within the first trimester (KNBS & ICF Macro, 2010). It is probable that this delay for the first visit to seek ANC service indicates the quality of care provided and the service providers attitudes (Gitimu et al., 2015).

2.5.2 Ever Use of FP

In Malawi, it was observed that women who use contraceptives probably visit maternal and child clinic regularly to be issued with contraceptives (Palamuleni, 2011). There

is likelihood that during these visits, they have been exposed to health messages that might influence them to utilization of maternal care in health facilities manned by skilled attendants (Palamuleni, 2011). Using contraceptives has been linked as a proxy for male involvement to institutional delivery (under care of skilled attendants) in rural Jhang, Pakistan (Carton & Agha, 2011). The study found that men's approval for use of contraceptives by their wives increased a mother's autonomy even in deciding the type of assistance to seek at the time of birth.

Women found to have never used contraceptives were 1.24 more times probable to under TBAs than when compared to women to have ever used contraceptives in Malawi (Palamuleni, 2004). While in Northern Ethiopia, ever users of contraceptives are 1.7 times more probable to have skilled delivery care compared to whom never used (Mengesha et al, 2013).

2.6 Socio- Cultural Factors and Unskilled Delivery

Socio-cultural factor to be reviewed is region of residence. Region in this context is used as a proxy for ethnicity.

2.6.1 Region of Residence

Ethnicity is considered as a marker of culture that is thought to have an effect on "beliefs, social norms and values to attached giving birth and the type of assistance to use at delivery" (Amooti-Kaguna, 1999). Different regions in countries have been found to have disparities as far as the type of service sought during delivery is concerned (Palamuleni, 2011). Differences in various regions in the utilization of unskilled delivery might be linked to how health facilities are spread including their accessibility and culture as well (Palamuleni, 2011).

Certain ethnic groups in rural Guatemala might be discriminated against by health facility staff that does not belong to their ethnic group as them. In some societies, ethnicity is

closely linked with socio-economic position with worse health infrastructure and transport which facilitates home deliveries. "Indigenous women of Latin American communities in Peru and Mexico are more likely to have unskilled care" (Gabrysch and Campbell, 2009). In Kenya, ethnicity has been found to be a determinant in utilization of non-skilled attendance among Luhya women (a dominant ethnic group found in Western region) who were more likely not to deliver in a facility - associated with skilled attendants (Kitui et al., 2013). In a study of predictors of home deliveries in Uganda, ethnicity was found to be a string determinant. In the south western of the country, not belonging to Buganda ethnic group was highly associated with home deliveries (Amooti-Kaguna, 1999).

Kurds in Turkey, ethnic minorities in China and other non-whites in South Africa, who largely occupy specific regions in the respective countries, are "more likely to be attended by unskilled birth attendants at delivery due to marginalization by their governments" (Gabrysch and Campbell, 2009).

2.7   Summary of Literature Review

Several studies have predicted the factors that do influence utilization of Unskilled delivery during child birth. Most determinants that have been found to influence the use of unskilled delivery include: low education level of the mothers; place of residence − mothers from rural areas and in urban informal settlements; region − marginalized parts within a country; mothers with lower frequency of ANC visits & delay in seeking first ANC visit; mothers from poor households; mothers below 30 years of age; mothers with high birth orders; and mothers who have never used contraceptives. (Kitui et al, 2013; Abebe et al 2012; Magesha et al 2013; Malderen et al 2013; Carton & Agha 2011; Bazant et al 2009 and Magoma et al 2010). Other determinants are; ethnicity (Kitui et al, 2013 and Bazant et al, 2009); (Malderen et al, 2013 and Bazant et al 2009).

2.8   Conceptual Framework

The "ASE-model" (Figure 2.1 below) proposes the prediction of a behaviour, that is a function of motivation or intentions of an individual (Amooti-Kaguna and Nuwaha, 2000). Three "psycho-social factors have been identified which predict intentions": These are "attitudes, social influence and self-efficacy. A person's attitude towards a specific behaviour is a result of the expected consequences from performing the behaviour. Social influence is a result of social norms relevant to the behaviour and influenced by others to either perform or refrain from it, even if the influencers perform or refrain from the behaviour themselves" (Amooti-Kaguna and Nuwaha, 2000).

Figure 2.1: Conceptual framework – ASE Model

Attitudes, Social norms and Self-efficacy (ASE) model for predicting behaviour
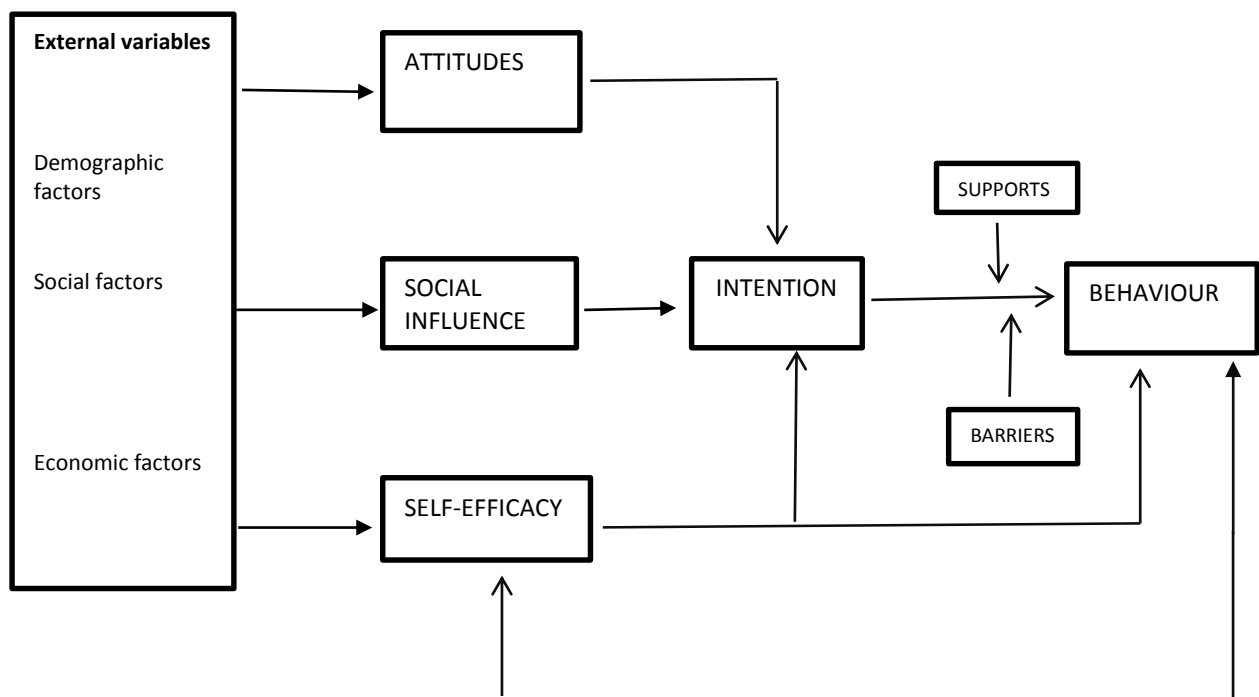
Source: Amooti-Kagunaa, B and Nuwaha, F. (2000) 'Factors influencing choice of delivery sites in Rakai District of Uganda', *Social Science & Medicine,* **50(2), pp. 203-213.**

"Self-efficacy in this case is the result of a woman's view that is subjective in nature of her abilities based on her knowledge whether she can perform the expected behaviour (use

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skilled or unskilled attendant) and whether she can cope with the perceived hinderances that might come her way in doing the behaviour" (Amooti-Kaguna and Nuwaha, 2000).

The model implies that, "a woman's behaviour – whether use of skilled or unskilled birth attendant – can be altered when the same is witnessed in her attitude, social influence and self-efficacy changes". From the ASE-model, Amooti-Kaguna and Nuwaha noted that "external factors such as social, demographic and economic factors are expected to influence behaviour through the behavioural determinants and intention" (Amooti-Kaguna and Nuwaha, 2000). In the model, "not only self-efficacy influences behaviour intention but also has a direct influence on the behaviour itself". In addition, "the behaviour or trying to perform the behaviour will lead to a feedback mechanism that may, in, turn, influence the determinants of behaviour" (as shown in the figure 2.1 above).

2.9 Operational Framework

The operational framework in this study is adopted from the "ASE-model". The framework presents variables used in the study. The psycho-social factors in the conceptual framework, that is; "attitudes, social influence and self-efficacy" have been left out since they cannot be measured from the Kenya Demographic and Health Survey data set. The study will employ socio-economic, demographic, health service, and socio-cultural variables that shape "the attitudes, social influence and self-efficacy" (Amooti-Kaguna and Nuwaha, 2000) of the mothers in establishing use of unskilled delivery. The influence of the socio-economic, demographic, health service, and socio-cultural factors can work directly and/or operate through health service factors that affects outcome in the operational framework.

Figure 2.2: Operational Framework
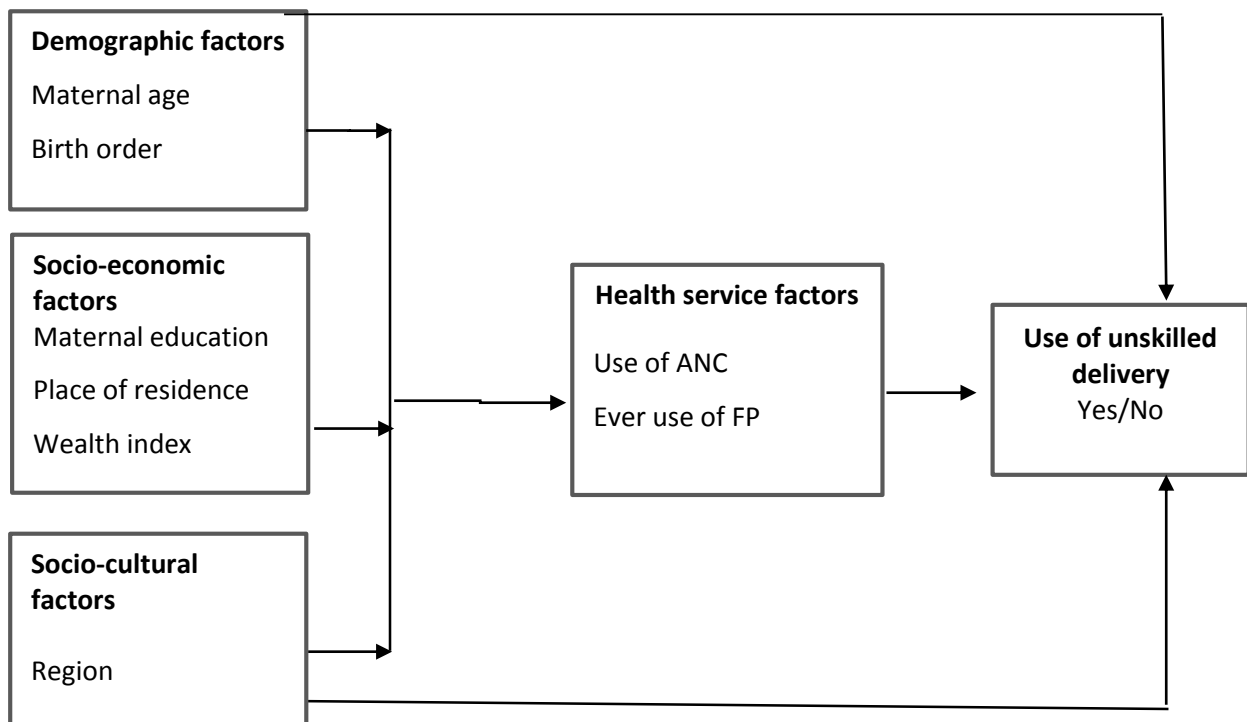
Table 2.1: Definition of variables in the framework and their measurements

Variables		Description	Variable options
Use of unskilled delivery		Birth assisted by: community health workers (CHW), traditional births attendants (TBA) whether trained or not, relatives or friends or and assistance from no one	0= No 1= Yes
Demographic	Maternal Age	Respondents age at last birth	1= <20 2= 20-34 3= 35+
	Birth order	Order of the last birth	1= 1-2 2= 3-4 3= 5 or more
Socio-Economic	Maternal Education	Education level of the woman	1= No education 2= Primary education 3= Secondary education or higher
	Wealth Index	Wealth status of the household	1= poorest 2= poorer 3= middle 4= Richer 5= Richest
	Place of Residence	Type of place of residence	1= Urban 2= Rural
Health Service	ANC visits	Number of ANC visits the mother made during the last pregnancy	1= None 2=1-3 visits 3=4 or more visits
	Ever use of FP	Whether the respondent has ever used modern contraceptive	1= Never used 2= Ever used
Socio-Cultural	Region of Residence	The different regions in Kenya where the respondent was interviewed	1= Nairobi 2= Central 3= Coast 4= Eastern 5= Nyanza 6=Rift Valley 7=Western 8=North Eastern

CHAPTER THREE: DATA AND METHODS

3.1   Introduction

This section discusses description of source of data to be used in the study and methods that will be employed for data analysis, and the ethical approval.

3.2   Data Source

The 2008-09 Kenya Demographic and Health Survey data was utilized by this study. Permission to use the KDHS data was sought from "Measure DHS". The survey questionnaire utilizes three types of questionnaires; household women and men questionnaires respectively. This study will use the women's questionnaire captured from the births file.

Unit of analysis are women of child bearing age (15-49 years) who gave birth to at least one child five years preceding the survey. Each was asked using the woman's questionnaire to report on the number of births that occurred five years before the survey, whether they were dead or alive, those who lived elsewhere and those who were with her. A total of 8444 women were interviewed. However, the study used data of the last birth to have occurred 5 years preceding the survey. Last births recorded were 4082. Of these, 2131 births were delivered under the care of unskilled delivery.

3.3   Methods of Data Analysis

3.3.1 Descriptive Statistics

Study population distribution will be shown by the different characteristics through the use of descriptive statistics. Distribution of frequencies and percentages indicate occurrence of variables in the data set. Frequencies and percentages give summary of numbers and proportions of the last births in the 5 years preceding the survey by selected independent variables. The frequencies and percentages give the initial findings of the study.

3.3.2 Cross Tabulation

Cross tabulation was used to indicate associations between each of the independent variables and the dependent variable. To show statistical significance, Chi-Square test will be used to measure the dependence of the association. Chi-Square is calculated using the formula below:

$$X^2 = \sum \frac{(0 - E)^2}{E}$$

Where: **E** is the expected frequency for a given cell.

0 is the observed frequency for a given cell.

$\sum$ (Sigma) is the summation of

However, Chi-Square statistic has a shortcoming, that it might not provide reliable guide to strength of the statistical relationship between explanatory variables and the dependent variable.

3.3.3 Logistic Regression

Logistic regression is the tool of analysis to be used in the study since the dependent variable is dichotomous, where the mothers' response was 'yes' or 'no' to whether they delivered under the supervision of non-skilled birth attendant. Logistic regression will be used to study the effect of the explanatory variables on use of unskilled delivery by women in Kenya. Logistic regression identified a fitting model that explains the relationship between the predictor variables (maternal education, place of residence, wealth index, region of residence, maternal age, birth order, number of ANC visits and ever use of contraceptives) and the use of unskilled delivery. Logistic regression model gives the probability of an event happening. If it's close to one (1) the probability of an event taking place is certain. If it is close to zero (0) the probability of the same event taking is uncertain.

The logistic regression model is presented below:

$$Y = \frac{e^{(b_0 + b_1 X1 + b_2 X_2 + \ldots + b_k X_k)}}{1 + e^{(b_0 + b_1 X_1 + b_2 X_2 + \ldots + b_k X_k)}}$$

Where: **Y** is expected probability that the outcome is present
e is the exponent
b_0 is constant of the regression model
b_1 - b_k are regression coefficients
X_1 - X_k are distinct independent variables

The model is made linear by transforming it to a logit model which is log of odd ratio as follows:

$$\ln[y/1\text{-}y] = b_0 + b_1 X_1 + b_2 X_2 + \ldots + b_k X_k$$

Where: ln is the natural log
b_0 is constant of the regression model
b_1 - b_k are regression coefficients
X_1 - X_k are distinct independent variables

3.4   Ethical Approval

This study obtained secondary data from "MEASURE DHS". Ethical approval was not necessary for this study as the data had been pre-identified from "MEASURE DHS" (KNBS & ICF Macro, 2010). The data collection procedures of the Kenya Demographic and Health Survey "had been previously approved by ICF Macro and Scientific and Ethical Review Committee of KEMRI" (KNBS & ICF Macro, 2010).

CHAPTER FOUR: FACTORS INFLUENCING USE OF UNSKILLED DELIVERY IN KENYA

4.1 Introduction

This section presents the results of the factors influencing deliveries by women aged 15 - 49 years attended by non-skilled birth attendants. The first part presents the descriptive data of the study population while the second part describes associations in utilization of unskilled delivery by background characteristics. The final part presents the multivariate analysis results of logistic regression.

4.2 Characteristics of Study Population

The results showing the background characteristics of the study population are presented in the Table 4.1 below. These variables are: demographic; maternal age and birth order; socio-economic; maternal education, type of place of residence and wealth index; health service factors; ANC visits, and ever use of contraceptives and socio-cultural factors as region of residence.

Five years preceding the 2008-09 Kenya Demographic and Health Survey, 2131 most recent births were reported to have been delivered through the assistance of non-skilled birth attendants. Analysis of the demographic characteristics of the women showed that majority were of prime age of 20-34 years at 69.1% while only 7.6% were aged 19 years or less.

The results showed that, about two thirds of the women had borne either 1 or 2 and 3 or 4 children at 31.8% and 30.8% respectively. Slightly over a third of the women had borne five or more children (37.9%). About half (47.8%) of all women never made the recommended ANC visits only attending three or less times. 36 percent made the recommended four or more visits to the ANC and 16.7% never made any visits. Slightly more than half of the women (51.3%) have never used modern methods of contraceptives.

About six out of every 10 women had only primary education (60.1%); about three women of 10 had no education all (28.5%) and only one woman among every ten had

attained secondary education (10.1%). Majority of these women (87.3%) resided in rural areas with only 27.7% staying in urban areas.

Table 4.1 Descriptive data on the study population according to the study variables in Kenya, 2008-09 KDHS

Variable	Number N = 2131	Percentage (%)
Demographic Factors		
Maternal age		
<20 yeras	161	7.6
20-34 years	1473	69.1
35+ years	497	23.3
Birth order		
1st -2nd delivery	678	31.8
3rd -4th delivery	645	30.3
5th and higher delivery	808	37.9
Socio-Economic Factors		
Maternal education		
No education	608	28.5
Primary	1289	60.5
Secondary +	234	11.0
Wealth status		
Poorest	851	39.9
Poorer	444	20.8
Middle	364	17.1
Richer	288	13.5
Richest	184	8.6
Type of Place of Residence		
Urban	271	12.7
Rural	1860	87.3
Health Service Factors		
ANC visits		
None	356	16.7
1-3 visits	1019	47.8
4 or more visits	756	35.5
Ever use of FP		
Never used	1094	51.3
Ever used	1037	48.7
Socio-Cultural Factors		
Region		
Nairobi	42	2.0
Central	98	4.6
Coast	313	14.7
Eastern	270	12.7
Nyanza	377	17.7
Rift Valley	455	21.4
Western	338	15.9
North-Eastern	238	11.2

Source: Analysis of KDHS 2008-09

Four in every 10 women were categorized has been poorest (39.9%) with every two classified as poor (20.8%). Only a small proportion of women were drawn from rich households (8.6%). Distribution of these women by their region of residence shows that about a fifth of them were from Rift Valley region (21.4%) with those drawn from Nairobi and Central regions being the least at 2% and 4.6% respectively.

4.3 Association Between Use of Unskilled Delivery and the Study Variables

The results presented in this section are bivariate analysis between various demographic and socio-economic factors and the use of unskilled delivery services. Chi-Square tests were carried out to show the association between dependent and independent variables. The results are presented in Table 4.2 below. All variables were found to be significantly associated with the use of unskilled delivery.

There was an increase in proportion of women using unskilled delivery among those aged below 20 years and those aged 35 years or more. The proportions of women also using unskilled delivery tend to increase with the higher number of children borne to them, with seven out of every 10 women having 5 or more children having delivered under the care of non-skilled attendants. Almost all women who never attended ANC (93%) delivered under unskilled delivery when compared to a lower proportion of women who made the recommended four or more visits (38.9%). About seven out of every 10 women who have never used modern contraceptives utilized unskilled delivery when compared to only four out of every 10 women who had ever used.

There was a decreased proportion among women using non-skilled attendance with improvement with the education levels, with those having no education at 81.3% and those with secondary and higher education level at only 22.6%. About two thirds of women in rural areas (62.2%) delivered under the care of unskilled attendants when compared with only a quarter (24.8%) among those living in urban areas.

Table 4.2 Differential in use of unskilled delivery according to the study variables in Kenya, 2008-09 KDHS

Variable	Use of Unskilled Delivery (Percent)	
	Yes	No
Maternal age		
< 20 years	53.5 (161)	46.5 (140)
20 - 34 years	49.9 (1473)	50.1 (1478)
35+ years	60.0 (497)	40.0 (331)
	$X^2 = 26.688$ df = 2 Sig = .000	
Birth order		
1st -2nd delivery	39.0 (678)	61.0 (1060)
3rd -4th delivery	54.0 (645)	46.0 (550)
5th and higher delivery	70.4 (808)	29.6 (339)
	$X^2 = 275.714$ df = 2 Sig = .000	
Maternal education		
No education	81.3 (608)	18.7 (140)
Primary	56.1 (1289)	43.9 (1007)
Secondary +	22.6 (234)	77.4 (802)
	$X^2 = 632.001$ df = 2 Sig = .000	
Wealth status		
Poorest	82.1 (851)	17.9 (185)
Poorer	64.5 (444)	35.5 (244)
Middle	53.8 (364)	46.2 (313)
Richer	40.5 (288)	59.5 (423)
Richest	19.0 (184)	81.0 (784)
	$X^2 = 881.293$ df = 4 Sig = .000	
Type of place of residence		
Urban	24.8 (271)	75.2 (821)
Rural	62.2 (1860)	37.8 (1128)
	$X^2 = 449.115$ df = 1 Sig = .000	
ANC visits		
None	93.0 (356)	7.0 (27)
1-3 visits	58.5 (645)	41.5 (724)
4 or more visits	38.7 (756)	61.3 (1198)
	$X^2 = 425.251$ df = 2 Sig = .000	
Ever use of FP		
Never used	68.6 (1094)	31.4 (500)
Ever used	41.7 (1037)	58.3 (1449)
	$X^2 = 282.075$ df = 1 Sig = .000	

Source: Analysis of KDHS 2008-09

Table 4.2 Differential in use of unskilled delivery according to the study variables in Kenya, 2008-09 KDHS (continued)

Variable	Use of Unskilled delivery (Percent)	
	Yes	No
Region		
Nairobi	12.6 (42)	87.4 (291)
Central	24.7 (98)	75.3 (298)
Coast	53.1 (313)	46.9 (277)
Eastern	51.7 (270)	48.3 (252)
Nyanza	52.4 (377)	47.6 (342)
Rift Valley	65.6 (455)	34.4 (239)
Western	65.8 (338)	34.2 (176)
Northeastern	76.3 (238)	23.7 (74)
	$X^2 = 489.066$ df = 7 Sig = .000	

Source: Analysis of KDHS 2008-09

Women who are classified as the poorest delivered under the non-professional care when compared to those categorized as middle and the richest at 53.8% and 19% respectively. According to the analysis by region, Nairobi and Central regions had the least number of women delivering under the care of unskilled attendants at 12.6 % and 24.7% respectively. Coast, Eastern and Nyanza regions had all their women, slightly more than half in each region using non-skilled attendance (53.1%, 51.7% and 52.4% respectively). Both Rift Valley and Western regions had more than two thirds of the women been assisted by non-skilled attendants (65.6% and 65.8%) with more than three quarters of women in North Eastern region (76.3%) seeking the same service.

4.4 Multivariate Analysis of Factors Influencing Use of Unskilled Delivery

This section presents the binary logistic regression results of various factors influencing use of unskilled delivery in Kenya. Logistic regression model was used to establish the effect of each of the independent variable on the use of unskilled delivery. The model fit was done by including all the independent variables at once. The estimated regression co-efficient for each independent variable represent the rate of change of the dependent variable function per unit change in the independent variable. On the other hand, a value greater than one for the odds ratios implies that, women in that category are more likely than those in the reference category to utilize Unskilled delivery; and a value less than one implies mothers in the category are less likely to deliver under the care of Unskilled delivery. The results are presented in Table 4.3 below.

Birth order was found to be significant in influencing mothers to deliver under the care of Non-Skilled attendants. Women whose last child to be born where of third or fourth order and those of fifth or higher orders where 1.5 times and 1.8 times more likely to have delivered under unskilled care respectively compared to women whose last child to be born where of either first or second order.

Maternal education was found to be a significant determinant in utilizing unskilled birth attendants. All women with primary, secondary or higher education levels were all less likely to seek unskilled delivery services at 61%, and 24% respectively, when compared to those with no level of education.

Wealth index was found to be an important determinant of the type of delivery assistance to seek. Women from the households with the poor and middle wealth index were 64% and 52% respectively, less likely to use the services of unskilled birth attendants when compared with their counterparts from households with the poorest wealth index. It was even less likely for women drawn from richer and the richest wealth households at forty and twenty four percent respectively.

Table 4.3 Logistic Regression Results of Independent Variables on Factors Influencing Use of Unskilled Delivery in Kenya, KDHS 2008-09

Variable	B	S.E.	Exp(B)
Constant	2.732	.348	15.367
Maternal Age			
Less than 20 years (RC)			
20 -34 years	.056	.152	1.058
35+ years	-.052	.193	.950
Birth Order			
1 – 2 (RC)			
3 - 4	.381	.097	1.464***
5 +	.600	.121	1.822***
Maternal Education			
No education (RC)			
Primary	-.489	.144	.613***
Secondary +	-1.428	.168	.240***
Wealth Index			
Poorest (RC)			
Poor	-.444	.127	.642***
Middle	-.643	.129	.526***
Richer	-.915	.136	.401***
Richest	-1.446	.170	.236***
Place of Residence			
Urban (RC)			
Rural	.434	.131	1.544***
ANC Visits			
None (RC)			
1 -3	-2.031	.225	.131***
4+	-2.519	.224	.081***
Ever Use of FP			
Never Used (RC)			
Ever Used	-.288	.090	.750***
Region			
Nairobi (RC)			
Central	-.550	.245	.577*
Coast	.409	.218	1.505
Eastern	-.014	.233	.986
Nyanza	.449	.220	1.567*
Rift Valley	.780	.223	2.181***
Western	1.088	.225	2.968***
North Eastern	.016	.277	1.016

*__***p<0.001, **p<0.01,   *p<0.05__*   *__(RC) Reference category__*
__Source: Analysis of KDHS 2008-09__

Residing in urban or rural areas was a significant in seeking unskilled attendance. Women in rural areas were 1.5 times more likely to have delivered under unskilled care when compared with their counterparts residing in urban areas.

Use of ANC services had a significant relationship with seeking of unskilled delivery. Women who had between one and three visits to ANC clinic during pregnancy were 13% less likely to deliver under the care of unskilled attendants when compared with those who never attended.

Women who had made the recommended four or more ANC visits were even less likely (8%) to seek delivery services from unskilled attendants when compared with those who never made any ANC visits. This is to say that women never attending ANC services are 7.6 times and 12.3 times likely to use unskilled care delivery services to those who made three or less visits and those who made four or more visits respectively. On the other hand, women who had never used any modern contraceptives where 1.3 times likely to deliver under the care of unskilled birth attendants compared to those who had ever used.

Region of residence was also significant in determinant what type of assistance to seek during delivery. The relationship between a woman drawn from either Central, Nyanza, Rift Valley and Western regions and the type of service sought at delivery was significant with Nairobi as the reference region. A woman from Central region was less likely to deliver under unskilled care to a woman drawn from Nairobi (58% less likely). On the other hand, women from Nyanza, Right Valley and Western regions were 1.6 times, 2.1 times and 2.9 times respectively more likely to deliver under unskilled care compared to women from Nairobi. Been drawn from Coast, Eastern and North-Eastern regions was not found to be significant with the use of unskilled delivery care.

4.5   Discussions of the Findings

Of all the independent variables analysed to determine their influence on the use of unskilled delivery, only maternal age was found not to be a significant factor when controlling for other factors. This finding is consistent with that of another study that reviewed several publications on determinants of use of delivery services, that found no effect of age and the type of service sought during delivery (Gabrysch and Campbell, 2009).

A child born being of third and/or higher birth order was associated with use of Unskilled delivery as opposed to being of first or second birth order. This finding reflects other studies done in rural Pakistan and Northern Ethiopia that have found that first or lower birth orders are delivered by skilled attendance (Agha and Carton, 2011; Worku et al, 2013). The findings also are in line with other studies conducted in Busia District of Uganda and Malawi that established fourth or higher birth orders were delivered under the care of Non-Skilled birth attendants (Anyait et al., 2013; Palamuleni, 2011). High parity women tend to less likely to use skilled delivery care based on their previous birth experience with no complications same as observed in Busia, Uganda (Anyait et al., 2013). First pregnancies are also perceived to be of higher risk level compared to subsequent as found in Ethiopia (Worku et al, 2013.

Education level had a negative effect with the use of unskilled care. The higher the level of education a woman had, the less likelihood of delivering under the supervision of unskilled birth attendant. This finding agrees with two studies done in Ethiopia that found illiterate women or with incomplete primary education to have delivered at home under the care of TBAs (Abebe et al., 2012; Mengesha et al., 2013). The same has been established in a publication that reviewed several studies in Africa on the type of assistance sought during delivery (Gabrysch and Campbell, 2009). For women from households with middle and rich wealth index improved their chance of not delivering under unskilled attendance as has been

established in other study findings (Kitui et al, 2013; Gabrysch and Campbell, 2009; Amooti-Kaguna and Nuwaha, 1999).

Rural residence increased the likelihood of delivering under care of unskilled attendants. This could be an indication of lack of access of skilled attendance due to limited facilities widely dispersed and/or lack of infrastructure like roads or the influence traditional belief systems that prefer use of TBAs. This is consistent with studies done in Kenya, Ethiopia, Malawi and Nigeria (Kitui et al, 2013; Malderen et al., 2013; Abebe et al., 2012; Palamuleni, 2011; Doctor and Dahiru, 2010).

Health service factors; ANC clinic service attendance and use of modern contraceptives was found to have a negative relationship with use of unskileed delivery services. Women found to have made the minimum recommended four ANC services were found to be 12.3 times more likely to attend skilled delivery compared with those who never made any visits. During the ANC visits women are encouraged to deliver under skilled care by the ANC service providers that results in higher chances of adhering to the advice. Women who never use modern contraceptives might not be exposed and influenced by health messages that might encourage them to use skilled attendants.

Central, Nyanza, Rift Valley and Western regions had a significant relationship with use of unskilled birth attendance when compared with Nairobi region as the reference category. Women from central region were 54% less likely to deliver under the care of unskilled attendant when compared to those in Nairobi. On the other hand, women Nyanza, in Rift Valley and Western regions were 1.6 times, 2.1 times and 2.8 times likely to deliver under unskilled care when compared to women drawn from Nairobi. However, there was no significance relationship on use of unskilled care for Coast, Eastern, and North-Eastern regions. This is attributed to the proportion of women in Nairobi (reference category) been

very low (from meaningful analysis) compared with the rest of the regions found to be insignificant as attested from Table 4.1 on descriptive data.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This chapter presents the summary of the findings, conclusions and recommendations of the study. The first section gives the summary of the findings, the second sections gives the conclusion and lastly, recommendations of the study are presented in the last section.

5.2   Summary of Findings

The overall objective of the study was to determine the factors associated with use of unskilled delivery by women of child bearing age in Kenya. The specific objectives of the study were to establish the effect of demographic, economic, socio-cultural and health service factors on use of on unskilled delivery in Kenya. The study variables analysed were: maternal age, birth order, maternal education, wealth index, place of residence, number of ANC visits, ever use of contraceptives, and region of residence.

The data of the study was obtained from the 2008-09 Kenya Demographic and Health Survey. The study was conceptualized within the "Attitudes, Social Influence and Self-Efficacy (ASE)" model, adapted from Amooti-Kaguna and Nuwaha (2000). The "ASE-model" is one of the "social cognition models commonly used in predicting and explaining health behaviour". Methods of data analysis employed were descriptive statistics, cross tabulations and binary logistic regression.

The bivariate analysis results showed that all the variables were significantly associated with the use of Unskilled delivery. However, the logistic regression results showed that only maternal age did not have effect on the use of Unskilled delivery.

Birth order was found to have a positive relationship with use of unskilled delivery. Higher birth orders increased the likelihood of delivering under the unskilled care. On the other hand, maternal education, wealth index and the number of ANC visits were found to have a negative relationship with use of unskilled delivery. With the increase of education

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level and wealth index of the mother; and the increase of ANC visits the mother made during pregnancy (4 and above visits) it decreased the likelihood of delivering under the care of unskilled birth attendant.

Place of residence, ever use of contraceptives and region of residence were also found to be important determinants on use of unskilled delivery. Rural residence increased the likelihood of mothers delivering under unskilled care when compared to urban residence. Mothers who had ever used modern contraceptives were 75% less likely to deliver under unskilled care. Central, Nyanza, Rift Valley and Western regions had a significant relationship with use of unskilled birth attendance when compared with Nairobi region as the reference category with women from Nyanza, Rift Valley and Western regions likely to deliver under unskilled care while those from central with less likelihood of delivering under unskilled care.

5.3   Conclusion

Maternal education, wealth index, place of residence and number of ANC visits were found to be the most significant study variables to influence use of unskilled delivery during delivery. These variables were found to be very significant ($p<0.001$) level. Equally, Rift Valley and Western regions had a very significant relationship with use of unskilled delivery also at $p<0.001$. Nyanza region had a significance level at $p<.05$. The study demonstrates that illiteracy and less illiterate levels leads to use of unskilled care during delivery. Mothers who are illiterate or of less literacy level might not have a decision-making power on health-related issues same as their health and welfare. Not being educated can also be likely synonymous with poor and/or poorest wealth index hence eroding the purchasing power of these women.

Women residing in rural areas were found to have a higher likelihood of delivering under unskilled care compared to their urban counterparts. This can be attributed to poor

infrastructure such as road network in the rural areas and less access to health services that might be a distant away from mothers' homes.

Antenatal clinic attendance and use of contraceptives serve as health system exposure factors. From the study it has been found that "women who make the recommended minimum of four ANC visits (focused antenatal care – FANC" as stipulated by World Health Organization had a less likelihood of delivering under the care of unskilled birth attendants. Also from the study the same was true for the women who had ever used modern contraceptives. Women are encouraged to deliver under skilled care by the ANC service providers that results in higher chances of adhering to the same. Women who have never used modern contraceptives might not have been exposed to health messages allied to health seeking behaviour in the formal health system that might likely lead to them delivering under Non-Skilled attendants.

It is noteworthy in the study that Coast, Eastern, and North-Eastern regions were not found to have a significant relationship with the use of unskilled delivery with Nairobi as the reference category. This is due to two possibilities; first, Nairobi as the reference category had a very low number of women (42) who delivered under unskilled attendance when compared to all other regions, hence the analysis was nor that meaningful. Secondly, the same characteristics exhibited by the research respondents in other regions (that were found not to be significant – Coast, Eastern, and North-Eastern) were same as those respondents from Nairobi, like women of high parity, holding the same low or no education level and made less than four visits during pregnancy. On the other hand, women in Nyanza, Rift Valley and Western regions might mean that they are not using skilled delivery services due either to their past experience (earlier pregnancies with no birth complications, hence found no need to for subsequent deliveries to be done in health facilities) or due to quality of health

services they might have had before, including how they were handled by the health service providers during delivery, thereby opting not to use skilled care in their subsequence births.

5.4 Recommendations

The study established that birth order, maternal education, wealth index, place of residence, number of ANC visits, ever use of contraceptives and region were all had a significant effect on use of Unskilled delivery. This section presents the recommendations resulting from the study findings both for policy and programme implementation and further research.

5.4.1 Recommendation for Policy and Programmes

i). The Kenyan Government, development partners and other non-state actors to continue in efforts of keeping girls longer in schools at least to attain secondary level of education. In line with this the Ministry of Education to ensure full compliance with the "MOEST Return to School Policy" for those girls who give birth mid-way of their either primary or secondary schooling.

ii). All County governments to fully implement the Ministry of Health's Community Health Strategy (level 1 service delivery) by ensuring the community health units are functional and develop them to be sustainable. Community health volunteers (CHVs) in some counties have been found to be effective in ensuring cross referrals between community members and the health facilities for a wide range of services including ANC, delivery and postnatal services.

iii). Implementation of specific strategic behaviour change programmes to the different regions in Kenya to increase demand for health services especially maternal, newborn and child health programmes to improve attitudes and perceptions of mothers on these services.

5.4.2 Recommendation for Further Research

Further investigation through conducting qualitative research to establish cultural and other barriers that might pose a challenge for mothers using skilled delivery services. This will go a long way to give a complete picture of the perceptions of the users on the same services.

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