PATTERNS OF UTILIZATION OF MATERNAL HEALTH SERVICES AND FERTILITY INTENTIONS

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DECLARATION

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

30.09.02

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

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DEDICATION

This Thesis is dedicated to my daughters Annette and Nicole for being patient throughout my studies.

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ABSTRACT

The study is based on data drawn from Kenya Demographic and Health Survey (KDHS) of 1998. This study attempts to identify some of the socio-economic, Demographic and community environmental factors that influences patterns of utilization of maternal Health services and fertility intentions.

The study made use of simple percentages to show the distribution of the respondent by the selected background variables and cross tabulations to show the association between the dependents variables and selected independent variables. Logistic regression analysis was used to show the linkage between fertility intentions, contraceptive use and utilization of maternal Health services.

The results of the analysis show that there is no uniform pattern of utilization of maternal health services, rather women exhibited switching behaviors. In the study, it was found that most women did not use maternal health services for both births. In most cases women used maternal health services for either births or none at all.

The study found out that there is a relationship between fertility intention and maternal health services utilization. Women who had received some kind of maternal health services such as tetanus toxoid injection were more likely to desire to have another child than those who did not receive Any form of maternal health services.

The results also show that various factors determine maternal health services utilization and fertility intentions. Factors that had significant influence on utilization of maternal health services and fertility intentions included maternal education partners education ever use of contraceptives, Children ever born, Region of residence, Type of place of residence and age. Women who had secondary and above level of education were likely to utilize maternal health services as compared to women who had no education or those who had primary education.

The study also found that the high parity women were less likely to utilize maternal health services as compared to the low parity women. Older women (35+) were less likely to use the maternal health services as compared to the younger women. Contraceptive use was a good determinant of maternal health services utilization. Women who reported using contraceptives were likely to use maternal health services.

The study found out that there is a linkage between fertility intentions and utilization in maternal health services, however this linkage could be working through other indirect means. Most important in the study is that there is a very strong linkage between contraceptive use and utilization of maternal health services and fertility intentions.

The study recommends that women be encouraged to use maternal health services for all the births and not just specific ones. That women be encouraged to deliver in health facilities since it has been established that over 60 percent of deliveries occur at home. The study also recommends that women be taught the importance of following the recommend dose of tetanus toxoid injections.

CHAPTER ONE

General introduction

1.0 Introduction

Since the safe motherhood initiative of 1987, maternal health care has assumed an important place in both national and international agencies. The concern has come about as a result of the realization that maternal health care has for along time been regarded as part and parcel of child health in that, its importance was seen in terms of the biological link between mother and child.

Thus, mothers have been included in maternal and child health (MCH) services mainly because of the benefit to child health and survival (Lesle & Gupta, 1989). This led Rosen field and Maine (1985) to quip," where is the M in MCH?" This type of approach to MCH favors only those women who are pregnant or have a child and assumes that women have no other reproductive health problems apart from those associated with pregnancy and childbirth.

In Kenya as in many other developing countries, maternal health services have been included as priority in health and development Programmes. Thus these services have been a source of major resource expenditure and a subject of research.

Studies indicate that great numbers of maternal deaths could be avoided with widespread accessibility and utilitization of maternal health services. Inadequate medical facilitates, treatment of complications and inadequate medical personnel contribute between 10 per cent and 45 per cent of all maternal deaths complications arising from maternal obstetric conditions, which need not lead to death. They occur mainly because of severe socio-economic deprivations that are prevalent in developing countries. However, the socio-economic factors do not work in isolation

but in conjunction with access to health services and ease of transportation (MOH, 1997; Obermeyer and Pottler, 1991).

Some of the factors, which have been shown to have an effect on the health of the mother, relate to the circumstances of pregnancy and childbirth (Jelliffe & Jelliffe, 1989); which in turn are associated with the availability and utilization of maternal health services.

Maternal health services (MHS) take on an important role in ensuring that women are able to go through pregnancy and childbirth safely and are able to guard against maternal and infant mortality and morbidity. This will however influence the desired family sizes.

The improvement of such services is therefore a first priority within the reproductive health circles, which emerged after the International Conference on Population and Development (ICPD). Therefore the role of maternal health services in the improvement of women's reproductive health and rights cannot be ignored.

1.1 Problem statement

The importance of maternal health care services in reducing maternal morbidity and mortality has received important recognition since the safe motherhood initiative of 1987 and more recently in the ICPD, Cairo (1994). It has been found out that the use of adequate antenatal and delivery services can reduce maternal deaths by between 10 to 45 percent, particularly in the developing countries where maternal mortality is very high (WHO (A), 1997).

The study seeks to identify the various patterns of maternal health utilization. There is inadequate information regarding the various patterns of utilization of maternal health services. The various factors that contribute to this pattern have also not been properly identified.

Reports from Kenya Demographic and Health survey for 1993 and 1998, indicate that over 90 percent of women attended antenatal clinics. Despite reported high utilization of antenatal care services in Kenya and high uptake of tetanus toxoid, more than half of the births in Kenya take place at home. More so most births take place un assisted by trained medical personnel yet all services are provided under one roof. Thus disturbing discrepancy in utilization of maternal health services is presented. Factors that contribute to this discrepancy are thus a subject of study. The risk of complication and/or death is highly increased under such situations (MOH, 1997).

According to KDHS of 1989, 1993 and 1998 there has been an increase in contraceptive use and n utilization of maternal health services, these increases have been observed amidst decline in

fertility. Thus the study is focused on finding out the link between contraceptive uses, maternal health services utilization and fertility intentions.

The outcome of this research will be able to answer the following research questions. What are the patterns of utilization of maternal health services? What is the link between contraceptive use, maternal health services utilization and fertility intentions?

1.2 Objectives of the study

General Objective

To establish the different patterns of utilization of Maternal Health Services and its effect on fertility intentions.

Specific Objectives

- To establish the pattern of use of Maternal Health Services
- To establish consistency in use for those women who gave birth to two of more children prior to the survey.
- Establish the determinants of maternal health services utilization and fertility intentions
- To establish whether there is a synergetic link between use of Maternal Health Services and contraceptive use and fertility intentions

1.3 Justification of the study

According to KDHS of 1989, 1993 and 1998 contraceptive use amongst currently married women has been on the increase. The increase has been 27 percent, 33 percent and 39 percent respectively for the above years. It is important to note that as contraceptive use increased, utilization of maternal health services has also increased simultaneously, over these years. More so, decline in fertility has also been observed amidst these changes.

This observation is a pointer to the fact that there could be a relationship between contraceptive use, utilization of maternal health services and fertility intentions. Although a number of studies on maternal Health Services (MHS) and fertility desires have been carried out in Kenya (Anker and Knowles 1982), much has not been done to establish the synergistic link between utilization of maternal health services, contraceptive use and fertility intentions.

The main aim of this thesis is to explore patterns and determinants of utilization of maternal health services in Kenya. The thesis also aims at finding the synergistic link between utilization of maternal health services, contraceptive use and fertility intentions with a view of suggesting ways of increasing the uptake of the first two services i.e. utilization of maternal health services and contraceptive use, so that women are able to go through pregnancy and child birth safely and are also able to prevent maternal and infant morbidity and mortality.

The study is thus useful because it hopes to establish the various patterns of utilization and factors influencing utilization. From here appropriate strategies can be devised to enhance the use of maternal health services.

The study further hopes to establish the linkages between contraceptive use, utilization of maternal health services and fertility intentions, which will be useful to policy makers.

The health of the woman is an important asset to herself, her family, the community and the nation in general. Since family health is greatly dependent on the health of women through their life, research is needed to generate data on maternal mortality and morbidity outside medical institutions. Moreover, the economic contribution of women to the family in particular and to societal development in general is often brought down due to pregnancy related deaths.

1.4 Scope and limitation of the study

The study focuses on the socio-economic, demographic and environment/ community determinants of patterns of utilization of maternal health services and fertility intention. The study is based on the data drawn from the Kenya Demographic and Health survey (1998). The data used represents women aged 15 to 49 years who at least had a birth in the last three years preceding the survey.

One major limitations of the study is that it uses secondary data, which the researcher has no control over. The data may have been subjected to both sampling and non-sampling errors. Such as failure to locate and interview the correct sample selected, errors in the way the questions were asked and misinterpretation of questions on the part of the interviewer and the respondent, plus other entries and data processing errors. However, sampling error for the whole country was small except for very small proportions (NCPD et al `1999) Thus no modifications were necessary.

The data used in the study is limiting in the sense that the survey was not specifically tailored for this study. It covers abroad category of topics and does not pay specific attention to the study topic. Moreover, the area of maternal health is given little coverage compared to infant and child health with which they are in a similar category. The study is thus limited to available data.

CHAPTER TWO

LITERATURE REVIEW

2.0 FERTILITY INTENTION

2.1 Review of fertility intentions in Kenya and other developingCountries.

Nearly everywhere the experience of becoming a mother and having a living child is valued, expected or even demanded of a woman if she is to lead a normal life within her family and community (Reining et. al, 1977). In the developed countries the gradual improvement in living conditions accompanying industrialization and urbanization coupled with broadening education and sanitation and a growing understanding of the principles of hygiene and nutrition resulted in progressive gains in child survival and declines in mortality at all ages (UN 1996). These same forces of development were progressive in changing attitudes towards reproduction, reducing the demand for children and lowering marital fertility.

In Kenya according to a knowledge attitude and preference survey of 1984, family size ideals are relatively high with the ideal family size being about six children. Results from the ILO/University of Nairobi Survey carried out by Anker and Knowles in 1982, revealed similarly high ideal family sizes. The two also found out that male preference is lower than female child preference for Kenyan wives. The idea that sex preference is lacking in Kenya is not surprising given the important role played by women in the rural economy and the traditional practice of paying bride prize at the time of marriage. The tabulation of ideal family size of ILO/University of Nairobi (Anker and Knowles 1982) survey shows that ideal family size is negatively related to wife's education and that ideal family size is lower in urban than in rural and in rural it is positively related to the amount of land owned. Thus the large number of children Kenyans have

may not be solely due to ignorance regarding family planning but may instead be due to at least in part, a desire for a large family. On the other hand couples are apparently aware of the economic costs of children and this awareness may affect family size desires as well as actual fertility.

According to Kenya Demographic and Health Survey of 1998, 40 percent of currently married women would like to have another child and only 14 per cent want one within two years. However about 78 percent of women would want to either space their next birth or to end childbearing altogether. However, the desire to discontinue child-bearing increases sharply with increasing number of living children (NCPD1998) for example only 2% of married women with no children would like to discontinue childbirth while about 75% of women with six or more children would like to discontinue childbirth. The desire to limit births rises rapidly with age while the desire to space birth declines with age. KDHS 1998 revealed that, the ideal number of children was 3.8 for women while men's was slightly higher at 4.0. From the survey it was noted that the ideal family size is strongly related to education level attained. As education increases, desired family size decreases sharply. Thus desired fertility is related to education level. According to Kenya Contraceptive Prevalence Survey (KCPS) of 1984, showed that the mean number of children ever born rose steadily with age from 0.4 children at age group 15-19 to 8.2 children at age group 45-49. The mean number of children ever born is substantially higher for rural than urban women at almost every age group. The rural -urban differentials in parity are more pronounced among women in the older age groups with the exception of women aged 45-49 in the other urban areas (KCPS 1984).

In other parts of the developing economies, a preference for sons has been widely documented and is attributable to a variety of social and economic factors (Pong 1994). The preference for sons is more than an attitude and has demographic consequences. Research conducted in Bangladesh, Korea and Pakistan has shown son preference to be partially responsible for parents' desire for additional children. When parents already have one son or more among their offspring, they are more likely to use contraceptives in order to delay or stop childbearing (Davanzo and Starbird, 1991).

A study of the value of children in Asian and Pacific countries concluded that family size was influenced by parent's preference for sons (Arnold et. al, 1975). Having sons who survive induces parents to adopt more effective or permanent methods of birth control such as sterilization or to have an abortion (Rahman et. al, 1992). Not only does the number of surviving sons trigger contraceptive use among non-users, it also reinforces continuation among contraceptive users. As a result, mothers with more sons bear fewer additional children or have longer subsequent birth intervals as compared with mothers with more daughters. Using the world fertility survey to analyze the relationships between son preference and total fertility in 27 developing countries Cain (1984) concluded that countries with marked preference for sons also had high and unyielding fertility. In China for example son preference has been cited as a reason for illegal use of prenatal sex identification technology such as ultrasound amniocentesis or chronic villas sampling and subsequent abortion when the fetus is a female (Yi et. al, 1993).

While the evidence of son preference in developing countries is overwhelming, researches have found a co-existing desire for a daughter among parents who already have more than one son. This dual situation is found among Thai women (Prachuabmon et. al, 1974).

Another strong association with the number of children desired is evident with exposure to the mass media, whether a woman listens to radio, watches television or reads newspapers or magazines with some frequency.

Choi and Kim (1981) in a study of Korea noted that the number of desired children increases steadily with the number of living children. This trend may be interpreted as reflecting both the smaller fertility ideals of younger cohorts and the nationalization of past fertility a woman pass through the childbearing years. Among women Koreans too, the strong preference for sons is clearly shown. For example, those who want more children, two thirds want a son, (Choi & Kim 1981). Virtually no woman wanted more children if she had three children, including two or more sons. When the number for living children reaches more than four, only around 5 percent of women desired to have more children.

It can therefore be concluded that current use of efficient methods is more precise and is directly related to the current reproductive behavior of women. Fertility desires are none of the important intermediate variables governing women's use of contraceptives.

2.2 Factors Influencing Utilization of Maternal Health Care Services.

According to World Health Organization (WHO) report, maternal mortality is first and second cause of death to women aged 25-34, half of whom live in the developing countries. This could however be an underestimation given that data on maternal mortality from the majority of developing countries is scarce (Royston, 1977). The general consensus of the majority of studies

that have addressed this problem is that access to maternity care is poor particularly in relation to trained supervision at delivery where life threatening obstetric emergicenceis is most likely to occur most.

A number of factors determine the use of health care services generally and maternal health care services particularly. Theoretically, Kroeger (1983) observed that the determinant of utilization of these services in developing countries could be grouped under three headings namely; predisposing factors such as age, sex household composition and size and ethnic group affiliation and education; characteristic's of illness, expected benefits from treatment and beliefs about disease causation and characteristics for the health care system, including cost and quality of care.

Generally a number of factors influence the utilization of Maternal Health Care Services. In a study of Risk Factors of Maternal Mortality in Ife, the strongest socio-economic differential between the cases and controls was educational level with the maternal death cases showing less education achievement and a higher proportion of illiteracy than controls. The authors concluded that the pathways through which educational attainment operate could be through the improvement of access to an appropriate health care facility (Okonofua et. al, 1992) This supports the hypothesis that better educated women are more likely to report in time when there are complications of pregnancy (C.F Lesle and Gupta, 1989). The above study carried out in Peru, confirmed the importance of maternal education on the utilization of both prenatal care services and delivery assistance.

Another factor identified in the Peru study was the distribution of health services. It was observed that the skewed distribution of health facilities was a major deterrent against the use of modern medicine and that efforts to expand the availability of preventive health care services have not been successful in reaching large segments of the rural population (Elo, I.T. 1991 Akin et al, 1985). Similarly Akin (1985) noted that for countries where statistics for both urban and rural populations were available, urban coverage of maternal care was always higher.

In a study carried out in Mexico, it was shown that the type of road was a significant predictor of timely utilization of pre-natal check-ups and of use of institutionalized delivery.
In other words, the existence of a good roads (defined as one which at least a significant portion was paved), accounted for 30% increase in the relative odds of a woman having a timely pre-natal examination by a physician and hospital based delivery.

The utilization of maternal health care services are also determined by the number of trained health personnel. Of particular significance to maternal care is the availability of nurses and midwives (Lesle and Gupta, 1989). Place of residence was also found to be a key determinant of utilization for maternal health services. In Kenya, more than half of the rural women who intended to deliver in the district hospital eventually delivered at home because they could not get there once the labour had started (Voorhorve, Kars and Van Ginnekin, 1984 C.F. Van Ginneken and Muller, 1984).

Other factors, which are said to be associated with the utilization of maternal health care, are the culture influences and belief systems (Basu, 1990). These are said to play a key role in

traditional practices and health care seeking behavior during pregnancy and childbirth. It has been argued that although a diverse range of factors may be considered" Socio-economic" a major uniting theme is the influence of the status of women i.e. factors that deny the women the right to reproductive choice and dignity and also inhibit their utilization of maternity care services. (Filippe et. al, 1990).

In summarizing the relative importance of service factors on utilization of maternity care services, Lesle and Gupta (1989) suggest that the key determinants are physical distance, hours of waiting time and adequacy of medical supplies. They are more significant barriers to utilization of maternity services than user factors which are client determined i.e. age, parity, educational status, etc.

Other factors also influencing maternal health services utilization is accessibility. Women in many parts of the developing world, particularly in rural may be prevented from receiving appropriate health services by costs related to distance and poor roads. Poor roads and bad weather make along trip to hospital difficult, particularly for a woman who is hemorrhaging or having convulsions (Family Health International, 1994). Distance and accessibility of services bring about influence in health care utilization. Long distance or inaccessibility of services can be an actual obstacle to reaching a health facility or can be a disincentive to even trying to seek care. The issue of access is worse for rural dwellers in developing countries. Those living in rural areas often have to walk or improvise means of transportation to reach a health facility. The roles of accessibility can be assessed by the severity of the condition in which patients arrive at the facility. Studies from different parts of the developing world have recorded sizable proportions of

maternal deaths, especially in the rural areas, occurring on the way to hospital (Thaddeus and Maine, 1994).

A study in Tanzania found that distance between medical facilities and the population was a major factor impeding utilization (Etten, 1978). Consultations at public clinics vary with the relative access, availability and affordability.

In Kenya, distance is a critical determinant in health care utilization and only those close to health institutions can make use of the services fully (King 1966). Areas located within 0-5 kilometers with a health facility, contributed four times as many people as those located 5 to over 10 kilometers away. Thus use is attributed to availability and accessibility to the institutions. The study found out that for three quarters of patients, the severity of the disease was not a major determinant in the utilization of hospital services but rather it was the distance.

It was also found that in Kenya short distance to health institutions was an encouragement to the use of the facility. Apart from that, free medication was also an attractive force (Nginya, 1980).

2.3 Maternal place of delivery and assistance at delivery

Although most developing countries have some maternity hospitals in which high risk deliveries are managed, many are over crowed and must struggle to provide adequate care with limited financial resources, personnel and facilities (Potts et. al, 1983). Thus the vast majority of births occur in developing countries where maternity care is often rudimentary. For many years many maternity hospital and centres in developing countries had no resources to systematically

evaluate their services and therefore could not determine the most effective means of improving their maternity care services to reduce the number of maternal deaths (Potts et. al, 1983).

In most developing countries deliveries take place at home. According to KDHS 1998 women aged 35 years or older are much more likely than younger women to deliver at home this is because of their experience over the years. High birth order of the child is associated with greater likelihood of home delivery. Women with education are three times more likely than women with no education to deliver their children in a health facility (NCPD 1993).

In developing countries shortage of doctors especially in rural areas necessitate that other health workers provide obstetric care. Throughout the third world countries a significant percentage of deliveries occur at home and are often assisted by neighbours (TBA) Potts et al (1983), McCarthy & Kowal (1988). In most developing countries access to maternity care is poor, particularly in relation to trained supervision of delivery when life threatening obstetric emergencies are most likely to occur (Winikoff, 1987).

In Kenya about 45% of births are assisted by medically trained personnel, these include doctors or nurses or midwives, KDHS 1993. Assistance at delivery normally varies according to characteristics of the mother. Births to mothers aged 20 and below are more likely to be assisted by medically trained personnel than births to mothers aged 35 years and over. First births too are more likely to benefit from trained personnel. According to KDHS 1993, assistance at delivery for first births accounted for 62%. More so most births in urban areas are more likely to be assisted by medical personnel than rural birth. Maternal education is closely linked to better supervision at delivery. In Kenya women with some secondary education are more than twice as

likely to receive assistance from a trained professional than women with no education (NCPD 1998).

However, exceptions have been observed for some socio-economic characteristics such as standard of living, which have been noted to have somewhat reduced predictive power on place of delivery, while urban residence has been observed to be an important predictor of institutional delivery (Obermeyer and potter, 1991; Bhatia and Cleland, 1995). Cultural factors have also been observed to play an important role in delivery care. In a study on cultural influences on health care use in India, Basu (1990) noted that fear and the physical inconveniences of a hospital delivery where the predominant reasons among Indian mothers for reluctance to have hospital deliveries.

In another study, it was found out that premarital childbearing had a greater adverse effect on institutional delivery. Women who had children outside marriage were less likely to deliver in health facilities.

2.4 Antenatal care

Pre-natal care for pregnant women in most developed countries and even in some developing countries reaches well over 90 percent women. In other developing countries, it is lower than 50 percent. Moreover, the quality and comprehensiveness of prenatal care in many developing countries is questionable (Afsar and Biliker, 1996).

Often in spite of reported high prenatal coverage there is no impact on antenatal mortality, Wallace et. al, 1995. Essential antenatal care requires at least measurement of blood pressure,

urine examination, haemoglobin estimation, height/weight estimation and abdominal estimation. However often sample tools for these are not available at the first level of care, hence antenatal care when it is provided is inadequate to detect any early signs of risk. Besides the lack of tools, community based health workers including the local birth attendants are not technically trained in their application (Wallace et. al, 1995)

Goldman (1987) in a study of Guatemala found out that primarily physicians, nurses and auxiliary nurses provided antenatal care at government health facilities. He further found out that private physicians were another important source of pregnancy related care but are out of reach of many poor women and rural residents because of their relatively high fees. As a result of this traditional midwives provided the majority of prenatal care.

Ginneken et al 1984 argue that the present prenatal and maternal mortality in developing countries would be much lower if all pregnant women had the benefit of free readily available antenatal care. In technically advanced countries, the decrease in maternal and prenatal mortality coincided with the increase in knowledge of the causes of many serious complications of pregnancy, Ginneken et al 1984.

Afsar and Biliker (1996) in analysis of Turkish Demographic and Health survey (TDHS) found that 62 percent of women received at least some prenatal care by health personnel and 60 percent delivered their babies in a health facility. For more than half of the births, antenatal care visits begin before the 5th month of pregnancy. 37 percent of women received no Antenatal care, while 36 per cent had four or more visits. Among those who received antenatal visits, the median number of visits was 4.7 with the median time at first visit being 3.1 months.

In Kenya, it was found that premarital childbearing had a greater adverse effect on the number of prenatal visits. Women with premarital births were less likely than those with marital births to seek prenatal care in the first trimester of pregnancy. Women who had mistimed pregnancies also had fewer pre natal visits (Gage,1996).

Suh (1982) in a study of Korea found that the utilization of prenatal care might have a variety of influences. Education was found to influence antenatal care utilization both directly and indirectly. The indirect effect of education is felt primarily through economic status and health knowledge factors. Age was found to have a weak direct influence on the use of prenatal care by pregnant women. The older a pregnant woman is, the greater the social influence she receives. The increased social influence contributes, also, to the response to medication factor, and thus results in greater prenatal care utilization.

2.5 CONCEPTUAL AND OPERATIONAL FRAMEWORK

2.5.1 CONCEPTUAL FRAMEWORK

The utilization of maternal health services is primarily triggered by the demographic, socio-economic and community /environmental factors which in turn can positively or negatively influence their desire for a child.

A number of factors determine the use of health care services in general and maternal health care services in particular. The importance of maternal health services in reducing maternal morbidity and mortality and in enhancing child survival has received important recognition since the safe motherhood initiative of 1987 and more recently in the international conference on population and development (ICPD) Cairo, 1994.

Okonofua et. al, (1992) in a study of risk factors of maternal mortality in Ife found that the strongest socio-economic differential between the cases and controls was education with the maternal death cases showing less educational achievement and a higher proportion of illiteracy than controls. The pathways through which educational attainment operates could be through the improvement of access to an appropriate health care facility.

The type of road is also a significant predictor of timely utilization of prenatal checks ups and of use of institutionalized delivery. Most women who intended to deliver in a health facility end up delivering at home because they could not get there once the labour began.

Other factors, which are said to be associated with the utilization of maternal health, are cultural influences and belief systems (Basu 1990). These two factors (Cultural influences and belief systems) play a key role in traditional practices and health care seeking behavior during pregnancy and childbirth.

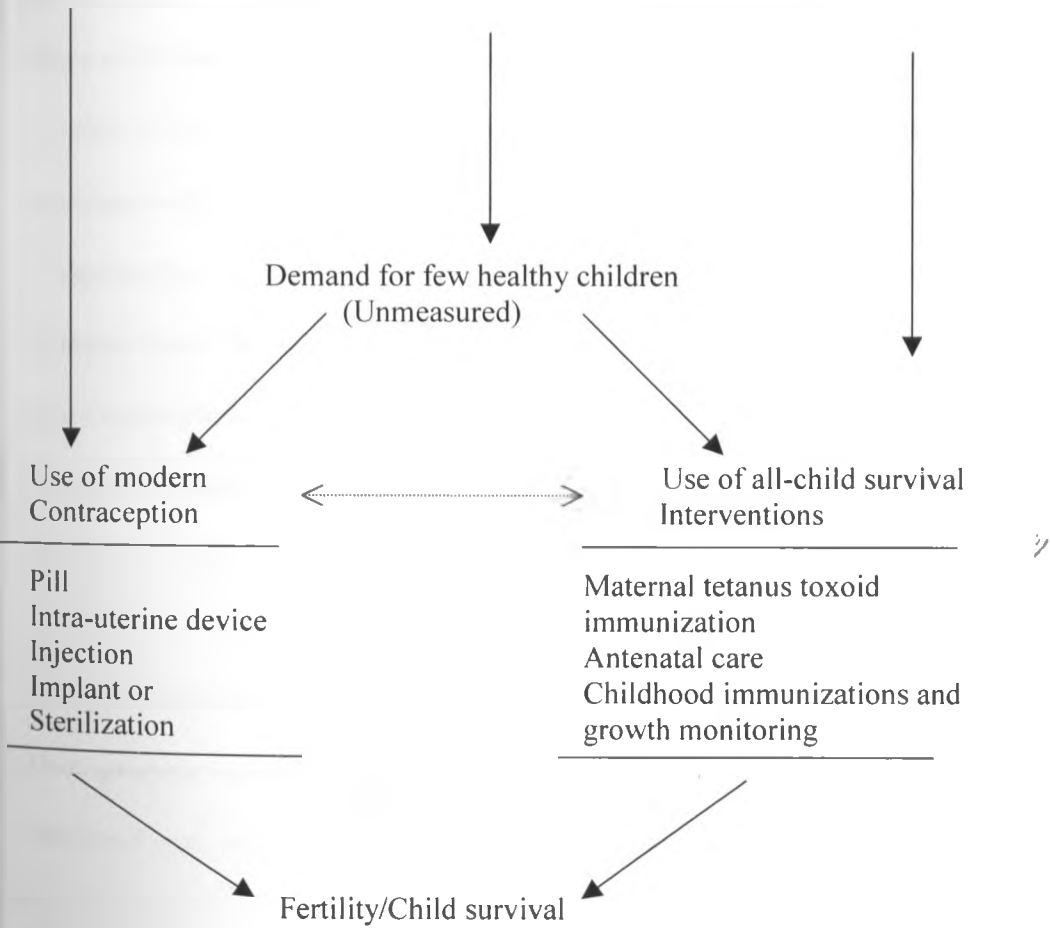
Factors that deny the women the right to reproductive choice and dignity also inhabit their utilization of maternity care services (Fillipe et. al, 1990) most women particularly in the developing world are not decision makers and decisions even those concerning their reproductive choice are made for them hence limiting their utilization of maternal health services.
Lesle and Gupta 1989, in a study in Peru confirmed the importance of maternal education on the utilization of maternal health services. Normally rural women are less educated than their urban counterparts hence the urban coverage of maternal care is usually always higher.

The utilization of maternal health services served as an important predictor of fertility desires. Women who received assistance at birth were more likely to desire to have another child as opposed to those who did not receive assistance (NCPD 1993). According to the same survey, it was found out that women who deliver in a health institution were more likely to desire to have another child compared to their counterparts who delivered at home.

In the conceptual framework, below the background factors influence the woman's demand for few and healthy children. This is enhanced by the use of modern contraceptives such as pills, intra-uterine devices, injections e.t.c. and the use of child survival interventions such as maternal tetanus toxoid injection, antenatal care, immunization, childhood immunization and so on. All these factors lead to the desired fertility and child survival.

Figure 2.1 Conceptual framework

Community and Health Service Factors	Maternal Factors	Household Factors
Region	Biologic	Husband's education
Urban-Rural	Marriage duration	Husband's occupation
Infrastructure/Institutions	Still breast-feeding	Monthly expenditures
Roads	Previous child death	Latrine facilities
Schools	Social	
Cooperative	Education	
Women's organization	Social organization activity	
Health facilities access	Knowledge of immunization	
Primary health care coverage	Religion	



Source: UN (1996)

2.5.2 OPERATIONALIZATION OF STUDY VARIABLES

The conceptual variables presented in the above framework have been operationalized to make them measurerable

Dependent variables:

The Dependent variables in this study includes fertility intention, place of delivery, assistance at delivery, receipt of tetanus toxoid injection and number of antenatal visits.

Fertility intentions: Refers to the desire to have or not have any more children apart from the existing ones. It is measured in terms of have another or not have another.

Place of delivery: this refers to where the respondent delivered. It is categorized as at home or at a health facility.

Assistance at delivery: This refers to care which the woman obtained when delivering. It is categorized as by no one, medical personnel, trained birth attendants, TBAs and relative / Friend.

Tetanus toxoid injection: This refers to the injection a women is given during pregnancy to guard against tetanus. It is measured as no injection, one injection and 2+ injections

Number of antenatal visits: refers to number of antenatal visits a woman attained during pregnancy. This variable is measured as no visit one visit, 2-3 visit and 4+ visits.

Independent variables

Demographic variables

Maternal age: refers to the age of the women as at the time of the interview.

Children ever born: this variable refers to the total number of children born alive to a woman. It is categorized as 1-3 children and 4 and above children.

Socio-economic variables

Maternal Education: This variable refers to the highest level of education that the women attained. It is categorized as no education primary incomplete primary complete and secondary +

Partner's education – this refers to the highest level of education attained by the woman's husband it is also categorized as no education, primary incomplete, primary complete and secondary +

Ever use of any contraceptive method: refers to if a woman had ever used any contraceptive method. It is measured as ever used or never used.

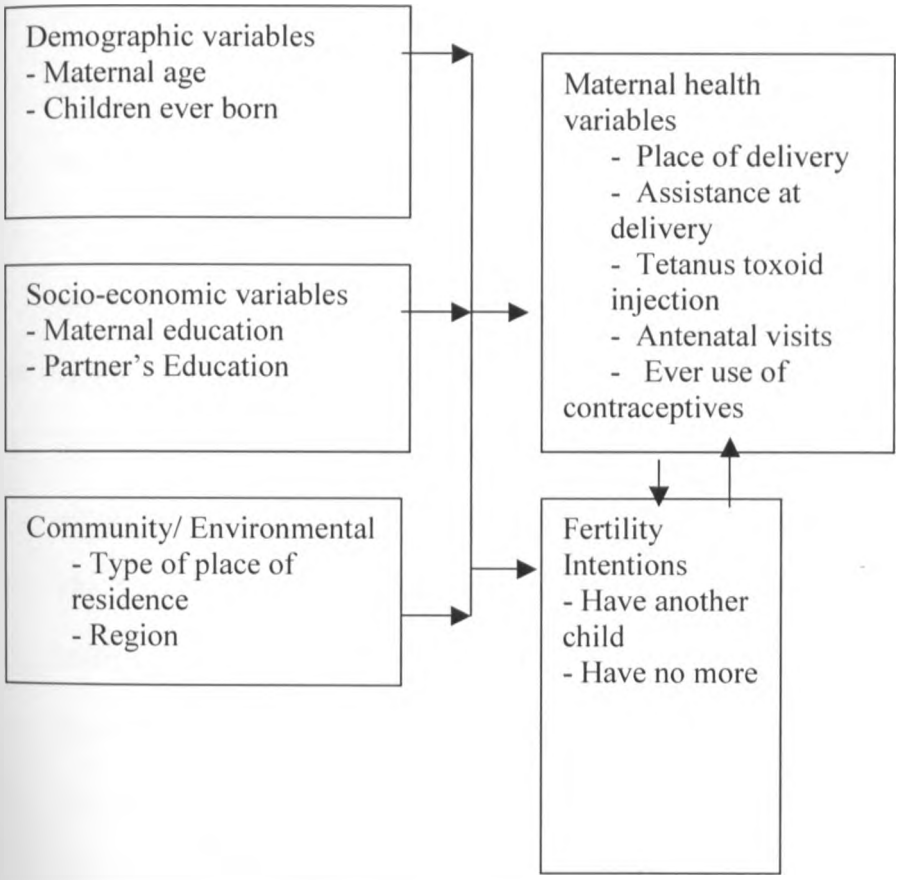
Community / Environmental variables:

Type of place of residence: refers to where the respondent usually lives. It is categorized as urban or rural.

Region: This refers to the province where the respondent comes from. It includes all the provinces in Kenya except Northeastern.

This operational model is for the analysis of the effect of demographic, socio-economic and community environmental factors on the patterns of utilization of maternal health services and fertility intentions.

Figure 2.2 Operational Frameworks



Source: Modified from UN (1996)

2.5.3 Operational hypothesis.

From the review of various literature and the association among the socio-economic, demographic and community /environmental variables to patterns of utilization of maternal health services and fertility intentions the following hypotheses were tested.

1. The higher the education level of the mother the higher the utilization of maternal health services.
2. The higher the education level of the husband the higher the utilization of maternal health services.
3. The type of place of residence of the mother influences the utilization of maternal health services.
4. Older women are more likely to use maternal health services than younger women.
5. The higher the number of children ever born the lower the utilization of maternal health services.
6. The desire to have fewer children increases with the education level of the mother.
7. There is a relationship between fertility intention and ever use of contraceptives.
8. The desire to have fewer healthier children is higher in urban areas than rural areas.
9. The province of residence of the mother influences the utilization of maternal health services.
10. Utilization of maternal health services influences ones fertility decisions.

CHAPTER THREE

DATA SOURCE AND METHOLODY

3.0 Study area

The study focuses on all the provinces covered by KDHS 1998, that is Nairobi, Central, Rift valley, Nyanza, Western, Eastern and Coast. The sparsely populated North Eastern province and four Northern districts i.e. Samburu, Turkana, Isiolo and Marsabit were not covered.

3.1 Study population

The study population here is categorized into two. First the study will use women who had two births in the last three years preceding the survey. This is to help come out with the patterns of utilization of maternal health services. Another set of data consists of all women who had at least a birth in the last three years preceding the survey.

3.2 Data source.

This study is based on secondary data drawn from 1998 Kenya demographic and health survey (KDHS). The 1998 KDHS was a national survey carried out by the national council for population and development (NCPD) in collaboration with the Central Bureau of statistics (CBS) and Macro International.

Three types of questionnaires were used in 1998 KDHS, The household, women's and men's questionnaires were used to collect information on reproductive history, HIV/ AIDS, family planning, maternal health and so on. Women between ages 15-49 were eligible for interview

and a total of 7881 women were interviewed. For this study; information collected using the woman questionnaire only will be used.

Using the men's questionnaire a total of 3,843 males were interviewed. The male part of the questionnaire obtained information on fertility, sexual behavior, family planning and HIV/AIDS awareness. The 1998 KDHS was designed as a follow up to the 1989 KDHS and 1993 KDHS with an aim of producing useful data for researches and policy makers.

3.3 METHODS OF DATA ANALYSIS

Two types of statistical methods and frequency distributions have been used in the study, the statistical methods are

(1) Bivariate analysis

(2) Logistic regression

3.3.1 Frequency distribution

Frequency tables are used to show the distribution of respondents by various backgrounds variables. Frequencies give a quick look at the initial findings of the study.

3.3.2 Bivariate analysis

Bivariate analysis is used to determine relationship among variables. It enables the combination of two or more variables to describe a problem or arrive at an explanation for the problem. In this study, bivariate analysis are used to show relationship between dependent variables and the various background variables, for example it is used to determine relationship between fertility intentions and age, or fertility intentions and maternal education or between the maternal health variables and

the selected background variables. Bivariate analyses have a greater advantage in giving comparative analysis and in further illustrations of frequency distribution according to each selected variables.

To determine the association between the dependent and the independent variables chi-square test is used. It is used to test if the observed outcomes are statistically significant. If the observed significance is less than 0.05, then the association between the independent variable and the dependent variable is statistically significant. But if the observed significance is more than 0.05 then it is not statistically significant or in other words there is no association between the dependent and the independent variable.

The advantaged of this method is that it shows whether relationships exist between phenomena that may not be measurable in absolute terms. The main disadvantage of these methods is that it does not tell us whether the finding is positive or negative, weak or strong hence calling for the application for other statistical methods.

3.3.3 Logistic Regression:

The study utilizes logistic regression to examine the determinants of utilization of maternal health services and fertility intention. Logistic regression has been found suitable as a method of analysis especially in attempts to determine the probability of an event occurring given certain conditions since the dependent variable is dichotomous.

Logistic regression is equated to any model building technique such as linear or multiple regression, the idea being to find the best fitting model to describe the relationship between an out come variable and independent variable.

This regression model selects a line of best fit, through ordinary least squares method. The line is fitted thought a set of points and minimize the sum of the squares of differences between the observed and the predicted Y values for each of the observed values of X. From the line of the best fit, the value of the dependent variable can be predicted.

The regression model also measures the strength of association between two variables. To do this, the simple r is used, usually referred to as correlation coefficient r takes the value of positive 1 to negative 1 if the values are close to +1 or -1 then it means that there is a strong relationship between the two variables, when it is zero, it means that there is no relationship between the two variables.

3.4 The logistic regression model

This type of regression model is similar to linear regression except that its outcome is binary or dichotomous. The logistic regression equation is as follows

$$\pi(x) = [\exp(^{B}_{O} + ^{B}_{1}{}^{X}_{1} + \ldots + B_p x_p)] / [1 + \exp(^{B}_{O} + ^{B}_{1}{}^{X}_{1} + \ldots + B_p x_p]$$

Where π (X) = Probability of an event occurring

B = the coefficients estimated

X = Independent variables

E= the base of the natural logarithms

This formula is transformed under what is called logit transformation.

This is defined in terms of π (X);

G (X) = ln [.....} / 1 - π (X) $e^{B}O + {}^{B}1^{X}$

The transformation is necessary as it has many of the desirable properties of linear regression. The logit transformation may be continuous and range from negative infinity to positive infinity depending on the range of X

3.5 Interpretation of the coefficients for the logistic regression model.

In logistic regression the estimated coefficients for the independent variables represent the rate of change of a function of the dependent variable per unit change in the independent variable(s). Determining the contribution of each variable is difficult because the effect of each depends on other variables in the model.

3.5.1 Regression coefficient (b). This is the measure of the slope of the line and the actual interpretation of the regression coefficient is made in relation to the reference category. B+ shows that the variable category has a positive effect on the dependent variable relative to the reference category. The value of b can also be zero showing that there is no effect on the independent variable.

3.5.2 Exponential B statistic [EXP (B)]. This is value by which the odds of the event change when one dependent variable increases by one unit. If the value is less than 1 then the odds are decreased. If the value is greater than 1 then the odds are increased. A value of 1 leaves the odds unchanged. Exponential B tends to zero as b becomes increasingly negative and increases if X is increasingly positive.

3.5.3 Observed significance level the observed significance level helps us make a decision whether to accept or reject the null hypothesis.

3.5.4 Limitations of logistic regression model

The approach assumes that all the observed frequencies for cells of the across- classification are greater than zero, or otherwise estimation is impossible.

It normally requires categorization hence information unique to particular categories is usually lost thus conclusions drawn about the relationships maybe inconsistent with those in he underlying population.

CHAPTER 4

PATTERNS AND DETERMINANTS OF UTILISATION OF MATERNAL HEALTH SERVICES AND FERTILITY INTENTIONS

4.1 introduction

This chapter addresses the first three study objectives, namely to establish the patterns of use of maternal health services, determine consistency in use of the maternal health services and determinants of utilization of the services. On the basis of these objectives and hypotheses, results of cross tabulation and chi-square tests are presented. Frequency distribution is used to give a quick look at the initial finding of the study. Cross tabulation have also been used because they give an overall picture of the relationship between the dependent and the independent variables. Regression analysis has also been used to show the effect of the independent variables on the dependent variable.

4.2 Background characteristics of survey respondents

The study covered a total of 3050 women (women who had at least a birth in the last three years) respondents sampled from seven of the eight provinces of Kenya. This represented well enough variation in ethnic distribution in the country, a reflection of the different socio- economic and demographic set ups that may affect maternal health utilization and fertility intentions.

The various characteristics of the respondents are as shown in Table 4.1 below. Most of the study population was drawn from Rift Valley followed by Nyanza. About 28 per cent of the respondents came from Rift valley. The least represented province was Nairobi having about 3.4

per cent of the total study population. As is expected, most of the data was drawn from rural set up constituting about 85 per cent of the respondents.

According to the table the majority of women had primary incomplete level of education only 1.7 per cent had above secondary level of education. 11.9 per cent had no education at all. This low level of education is likely to impact negatively on the utilization of maternal health services, as studies have shown that there is a close association between educational level and maternal health services utilization (Kroeger 1983). As opposed to 11.9 per cent of women who did not have any education only 6.3 percent of their spouses did not have any education at all Just like their wives, a majority of the men had primary incomplete level of education.

Table 4.1 Percentage distributions of respondents according to various background characteristics

Variable	Number	Percentage
Region		
Nairobi	105	3.4
Central	257	8.4
Coast	461	15.1
Eastern	427	14.9
Nyanza	545	17.9
Rift Valley	869	28.2
Western	395	13.0
Type of place of residence		
Urban	456	15.0
Rural	2594	85.0
Education		
No education	353	11.9
Primary incomplete	1945	63.8
Primary complete	690	22.6

Secondary+	52	1.7
Partner's education		
No education	192	6.3
Primary incomplete	1399	45.9
Primary complete	1012	33.2
Secondary+	92	3.0
Ever use of a contraceptive		
Never used	1279	41.9
Ever used	1771	58.1
Age		
15-19	319	10.5
20-24	893	29.3
25-29	819	26.9
30-34	510	16.7
35+	509	16.7
Children ever born		
1-3 children	1778	58.3
4+	1272	41.7

Source: Computed from analysis of KDHS 1998

Over 58 per cent of women reported having used some contraception method at one time, as opposed to 41.9 per cent who had not used any method. However, the use of contraceptives has been used as a determinant to exposure to maternal health services since the two are given by one provider, hence the high number of women who have never used any method of family planning does not ogre well for the utilization of maternal health services.

The distribution of age of women reveals that the majority of women were at the peak of reproductive age i.e. 20-29. Only 10.5 per cent constituted women in the age bracket 15-19. More so women who were in the age category 35+ were also few (16.7 per cent) considering that this category captures women up to 49 years old. The majority of women had between 1-3 children. This constituted 58.3 per cent of the Total births. About 42 per cent of the women had more than four children.

4.3: Coding and description of variables

The coding and description of fertility indicators and the independent variables is done to enable the study to explore the relationship between the fertility indicators and the various demographic, socio-economic, and community/environment variables considered to have significant effects on it. The proposed reference categories are also specified in the table.

Table 4.2 Codes and descriptions of selected variables

Variable	Category	Description
Fertility intention	1 – Have another 2 – Have no more (ref)	Criterion indicating the proportion of women who wanted or did not want another child.
Education Level	0 – No Education 1 – Primary Incomplete 2 – Primary complete 3 – Secondary + (ref)	Predictor indicating the level of education of the mother if no education, primary complete or secondary
Age	1-15-19 2-20-24 3-25-29 4-30-34 5-35+(ref)	Predictor indicating the age of the woman.
Place of delivery	1 – At home (ref) 2 – At a health facility	Predictor indicating whether the woman delivered at home or at a health facility
Assistance at delivery	0 – No assistance 1- Medical personnel	Predictor indicating whether the woman

	2- Trained birth attendants 3- TBAs 4- Relative-friend	was assisted at delivery by a medical personnel, TBAs, relative friend trained birth attendants or no one.
Tetanus toxoid injection	0 – No injection (ref) 1 – One injection 2 – 2 injections	Predictor indicating whether the respondent received one injection, more than 2 injections or none at all.
Place of residence	1 – Rural (ref) 2 – Urban	Predictor indicating whether the respondent resides in rural or urban
Region of residence	1. Nairobi (ref) 2. Central 3. Coast 4. Eastern 5. Nyanza 6. Rift Valley 7. Western	Predictor indicating respondents province of residence
Antenatal Visits	0 – No Visit 1 – One visit (ref) 2 – 2-3 Visits 3 – 4 + visits	Predictor indicating the number of times the woman attended antenatal check ups.
Contraceptive use	0- Never used (ref) 1- Ever used	Predictor indicating whether the woman has ever used or never used any contraceptive method
Partner's education	0 – No education 1- Primary incomplete 2- Primary complete 3- Secondary+(ref)	Predictor indicating the educational level of the respondent's husband
Children ever born	0- 1-3 children (ref) 1- 4+ children	Predictor indicating the number of children the woman has ever had.

Source: computed from KDHS, 1998

4.4 Patterns of utilization of maternal health services

The first objective of the study was to establish the pattern of use of maternal health services. To achieve this goal, frequency distribution and simple bivariate regression analysis is done. This sub-section of women with two births in the last three years formed the sample. A total of 459 women were used for analysis. Two births are used to be able to find out if women who used maternal health services for the last birth, also did so for the second last birth. Frequencies will then give the distribution of variables, while bivariate regression analysis will give the effect of the independent variables on the dependent variable. It is important to note that the sample used in this study is too small and might not be well representative.

Table 4.3 Percentage Distribution of utilization of maternal health services for women with two births in 3 years preceding the survey

	Antenatal Care by professional		Tetanus toxoid Injection	
Women with two Births	**Number**	**Percentage**	**Number**	**Percentage**
Yes, Yes	402	87.6	167	36.4
Yes, No	7	1.5	14	3.1
No, Yes	27	5.9	35	7.6
No, No	18	3.9	19	4.1
Yes, Dk	-	-	1	0.2
No, Dk	-	-	1	0.2
M, M	5	1.1	222	48.4
Total	459	100	459	100

Source: computed from analysis of KDHS, 1998 Excluding twins.

Key: DK = Don't Know; M = Missing

The above table shows that most women received preventive maternal health care for both tetanus toxoid and antenatal care by professional health workers. 87.6 per cent percentage of women received antenatal care from professional health worker for both births. Only 3.9 per cent did not receive tetanus toxoid for any birth. 36.4 per cent of women received tetanus toxoid injection for both births while 4.1 per cent reported having not received any tetanus toxoid injection for both births.

From the above table it clearly indicates that women who used maternal health care services for the first birth were likely to use the same services for the second birth, that is a high percentage of women used these services for both births. The table thus indicates that the pattern of utilization of maternal health services is not dichotomous i.e. those who used the services for both births and those who did not use the service for both births.

4.4.1 Effects of selected background variables on maternal care

As it is noted, maternal care is a variable coined from receipt of antenatal care from professional and receipt of tetanus injection. A total of 459 women are used in the analysis. In this subsection a bivariate analysis is carried out to measure the affects of a few selected background variables on maternal care. The results of the analysis are presented in T able 4.4.

Table 4.4 **Odds ratios showing the effect of selected background variables on maternal care.**

MATERNAL CARE

Variable	Regression coefficients	Std. Error of B	Significant level of B
Level of education			
No education (ref)			
Primary education	-0.4725	0.4833	0.3282
secondary education	1.4784	0.6843	0.2037
Maternal age			
15-19 (ref)			
20-24	0.5308	0.6755	0.4320
25-29	2.0032	0.7557	0.3788
30-34	0.1327	0.7998	0.8682
35+	0.0992	0.8323	0.9051
Place of Delivery			
Health (ref)			
Home	1.0862	0.5452	0.0463
Children ever born			
>3			
3+	0.4805	0.4211	0.2538
Constant	-0.9003	0.8770	0.0009

Source: computed from analysis of KDHS, 1998

Note: The variable maternal care refers to the use of antenatal care by professional and tetanus toxoid injection for both the last child and second last child and for those who had switching behaviors.

From Table 4.4 there are no significance differences among the categories of education in their propensity to utilization of maternal care. It is observed that relative to no education, primary education, secondary education has insignificant effect on the dependent variable i.e. maternal care.

This in essence means that women with secondary education are more likely to consistently use maternal health services.

As compared to delivery at a health facility, delivery at other places was found to have significant effect on maternal care. Delivery at home other than a health facility is important in the usage of maternal health care services. Thus women who deliver at other places other than a health facility are more likely to use maternal care services. This finding is statistically significant

4.4.2 Ever use of contraceptive and maternal care

Table 4.5 shows a cross classification between contraceptive use and maternal care. Chi-square tests were carried out to show the association between the dependent variable and the independent variable.

Table 4.5: Distribution of ever use of contraceptives methods by maternal care

	Maternal care		
Variable	**Yes**	**No**	**No of cases**
Ever use any contraceptives			
Never used	84.4	15.6	179
Ever used	92.1	7.9	223

X^2 6.632 df 1 sign.010

Source: computed from analysis of KDHS 1998

The results show that 84.4 percent of women who did not use any method also did not use any maternal care service for both births, while 15.6 percent who had never used any method did not use for either the births. 92.1 per cent of those who used a method also used maternal care services for both births only 7.9 per cent of those who had ever used a method used maternal care services for either of the births.

4.5 Determinants of maternal health services utilization and fertility intentions

In this subsection women with at least a birth in the last three years formed the sample. To achieve the above objective, cross tabulations between the dependent variable and the independent variables are indicated in the Tables below. This sub section examines determinants of utilization of maternal health services and fertility intentions. The maternal health services stated include place of delivery, assistance at delivery, tetanus toxoid injection and antenatal visits.

Results of chi-square tests indicate that some factors such as age, education, contraceptive use and so on are associated with the use of given forms of maternal health services and fertility intentions, while others do not have a significant relationship at all, as will be discussed in the following section.

Table 4.6 aims at exploring the levels of utilization of various maternal health services. Despite the risks involved in delivering at home, more than 60 per cent of women delivered at home. This finding is consistent with that of Potts et. al, (1983), that throughout the third world countries a significant percentage of deliveries occur at home. Only 39.4 of women delivered in a health facility. Majority of the women received less than 4 antenatal care check ups during pregnancy.

62 per cent had more than 5 antenatal check ups. This is life threatening as it shows that their pregnancies were not regularly checked.

Table 4.6 Percentage distribution of respondents by selected maternal health variables

Variable	Number	Percentage
Place of delivery		
At home	1848	60.6
At health facility	1202	39.4
Antenatal visits		
No visits	163	5.3
One visit	110	3.6
2-3 visits	887	29.1
4+	1890	62.0
Tetanus injection		
No injection	279	9.1
One injection	1199	39.3
2+ injections	1572	51.5
Assistance at delivery		
No one	304	10
Medical personnel	1245	40.8
Trained birth attendant	325	10.7
TBAs	300	9.8
Relative/friend	861	28.2

Source: computed from analysis of KDHS, 1998

The uptake of tetanus injection as is evident from the above table is high. More than 90 per cent of women had had at least one injection. However the world Health Organization recommends that a woman should have two doses for the first child, and another one for the second and the

subsequent birth. A further analysis of the table shows that 39.3 per cent of the women had had one injection.

A majority of the women reported having been assisted at delivery by a medical personnel (40.8 per cent). 28.2 per cent reported having been assisted by relative/friend. However, another 10 per cent reported having not received any assistance hence signifying the risks in which they were exposed to .A mere 9.8 per cent were delivered by TBAs.

4.5.1 Fertility intentions by selected background characteristics.

This section examines the effect of various variables on the woman's fertility preferences. It further examines if there exists a relationship between a woman's fertility intention and the selected background variables. Thus the results of cross tabulations and chi-square values are presented in Table 4.7.

4.5.2 Ever use the any contraceptives.

Table 4.7 presents the distribution of fertility intentions by maternal ever use of any contraceptive method. 48 per cent of women who never used contraceptives wanted to have another child. This was opposed to 42.9 per cent of those who used and wanted to have another child. 57.1 per cent of women who had ever used a method did not want to have another child. The observed relationship between fertility intention and ever use of any method is statistically significant. This observation confirms the study hypothesis that there is a significant positive relationship between fertility intention and contraceptive use.

4.5.3 Partner's Education

The table shows that 35.4 per cent of women whose partners had no education wanted to have another child. From the table, a woman's desire to have another child increased with the partner's educational level. Thus the highest number of women who wanted another child were those whose husbands had secondary + level of education. The cross tabulation results show that the observed relationship is statistically significant.

Table 4.7 percentage distribution of fertility intentions by selected background characteristics.

Variables	Fertility intention		
	Yes	No	No. of cases
Ever use of any method			
Never used	48.8	51.2	1279
Ever used	42.9	57.1	1771
X^2 10.340 df3 sign 0.000			
Partners education			
No education	35.4	64.6	192
Primary incomplete	44.7	55.3	1399
Primary complete	46.4	53.6	1012
Secondary	53.3	46.7	92
X^2 10.572 of 3 sign 0.014			
Maternal age			
15-19	74.3	25.7	319
20-24	67.4	32.6	893
25-29	44.0	56.0	819
30-34	27.1	72.9	510
35+	9.2	90.8	509
X^2 620.546 of 4 sign 0.000			
Children ever born			
1-3 children	63.3	36.7	1778
4+ children	20.3	79.7	1272
X^2 554.351 df 1 sign 0.000			
Level of education			
No education	36.6	63.4	363
Primary incomplete	46.4	53.6	1945
Primary complete	47.1	52.9	690
Secondary +	46.2	53.8	52
$X^2$12.804 df 3 sign 0.005			
Type of place of residence			
Urban	45.6	54.4	456
Rural	45.3	54.7	2594
$X^2$0.012 df1 sign. 0.912			
Region			
Nairobi	41.1	59.0	105
Central	43.6	56.4	257
Coast	52.1	47.9	461
Eastern	41.7	58.3	427
Nyanza	48.6	51.4	545
Rift valley	40.5	59.5	860
Western	50.1	49.9	395
$X^2$26.104 df6 sign 0.000			

Source: computed from analysis of KDHS, 1998

4.5.4 Maternal Age

The desire to have an additional child/children decreases with the increasing age of the mother. The majority of women who wanted a child were those in the age category 15-19 years accounting for 74.3 per cent. Only 9.2 per cent women aged 35+ desired to have a child. Thus the desire to have a child is higher among the younger women.

4.5.5 Children ever born.

The desire to have an additional child decreases with the number of children ever born. Only 20.3per cent of women who had more than 4 children wanted to have a child. An over whelming 63.3per cent of those who had 1-3 children wanted to have another child. The overall desire for another child is thus significantly associated with children ever born.

4.5.6 maternal education

As is the case with partner's education the desire for another child increased with the increasing level of education of the mother. Majority of women who expressed desire to have a child had above secondary education. This is primarily due to the fact that most of them spend many years schooling hence begin child bearing late. Fertility intention is significantly related to maternal education.

4.5.7 Type of place of residence

Decision of fertility is similar for urban and rural dwellers. There is only a little difference of 0.3 per cent hence not significant. It is therefore apt to conclude that there is no significant relationship between place of residence and fertility intention.

4.5.8 Region

The cross tabulation indicates a statistically significant association between fertility intentions and region. This therefore means that the province of inhabitance is likely to influence a person's decision on fertility. A majority of the respondents who wanted to have a child came from coast (52.1 per cent) and western (50.1 per cent) Nairobi recorded the lowest number of women who wanted to have another child (41.0 per cent). This could be due the fact that the cultural beliefs in these provinces advocate for high parity.

4.6 Fertility intentions by various maternal health variables

4.6.1 Tetanus toxoid injection

It is recommended that an expectant mother should get at least two tetanus toxoid injection for the first child. For the second birth and the following one, one booster is necessary. As seen earlier in the study, over 90 per cent of women received tetanus toxoid injection. From the table, the number of tetanus toxoid injection that a woman received before birth is significantly associated with fertility intentions.

4.6.2 Number of Antenatal care visits

There is little difference between women who had no antenatal care visits and those who had 4+ visits as pertains to their fertility decisions. 42.3 per cent of women who had not attended antenatal visits expressed the desire to have a child, while 46.3 per cent of those who had more than four visits wanted to have a child.

Table 4.8 percentage distribution of fertility intentions by selected maternal health variables

Variable	Yes	No	No Of Cases
Tetanus toxoid injection			
No injection	45.5	54.5	279
One injection	42.5	57.5	1199
2+ injections	47.5	52.5	1572
X^2 6.618 df 2 sign 0.033			
Number of Antenatal Care Visits			
No visits	42.3	57.7	163
One visit	43.6	56.4	110
2-3 visits	44.2	55.8	887
4+	46.3	53.7	1890
X^2 1.890 df 3sign. 0.596			
Assistance at delivery			
No one	33.2	66.8	304
Medical personnel	47.2	52.8	1245
Trained birth attendants	45.2	54.8	325
TBAs	47.7	52.3	300
Relative/friend	46.7	53.3	861
X^2 1.045 df.4 sign. 0.000			
Place of delivery			
At home	44.1	55.9	1848
At a heath facility	47.3	52.7	1202
X^2 3.077 df 1 sign 0.079			

Source: computed from analysis of KDHS, 1998

4.6.3 Assistance at delivery.

33.2 per cent of women who did not receive any assistance at delivery wanted to have another child. An overwhelming 66.8 percent did not wanted to have another child. As can be seen from the table, most women who received any kind of assistance at delivery wanted to have another child. Hence assistance at delivery is significantly related to one's fertility intentions.

4.6.4 Place of delivery:

The results show that 44.1 per cent of women who delivered at home preferred having another child. At least 47 per cent of those who delivered at a health facility wanted to have another child. This desire to have another child may be encouraged by the fact that they delivered where proper medical attention is given and hygienic conditions observed to reduce the risk of complication and infections. Place of delivery is seen to be significantly related to fertility intention.

4.7 Utilization of maternal health services by selected background variables

This sub section will examine the various differences in utilization of maternal health services. The maternal health services to be observed include antenatal care, place of delivery, Tetanus toxoid and assistance at delivery.

4.7.1 Place of delivery

The results of the cross-tabulation from table 4.9 indicate that women with no education are more likely to deliver at home as compared to women with education. From the table 80.2 per cent of women without any education delivered at home. This finding is similar to that of (KDHS 1993) that women with education are three times more likely than women with no education to deliver

their children in a health facility. This finding is also similar to that of Kroeger (1983) that education is a key determinant of utilization of maternal health services.

Partner's education was also found to be significantly related to place of delivery. Thus 82.8per cent of women whose partners had no education delivered at home. With regard to ever use of any method, majority of the women who never used any method were likely to deliver at home. Only 25.5 per cent of such women delivered at a health facility. Regarding mothers age, women in the age category 15-19 were less likely to deliver at home. However older women above 35 years were more likely to deliver at home. Almost 70per cent of women aged 35 and above delivered at home.

Assistance at delivery too is observed to be significantly related to place of delivery. 99 percent of women who delivered at home were assisted by no one at delivery. Almost 100 per cent of women who delivered at home were assisted by TBAs or relative/friend. Over 90 per cent of births in health facility were assisted by medical personnel it is important to note that a substantial percentage of births in health facilities were not attended to by medical personnel.

Table 4.9 Percentage distribution of place of delivery by selected background characteristics

Variable	At home	At a health facility	No of cases
Maternal Education			
No. Education	80.2	19.8	363
Primary Incomplete	67.3	32.7	1945
Primary complete	35.4	64.6	690
Secondary +	7.7	92.3	52
X^2 339.77 df 3 sign. 0.000			
Partners education			
No Education	82.8	17.2	192
Primary incomplete	71.0	29.0	1399
Primary complete	46.3	53.7	1012
Secondary	26.1	73.9	92
$X^2$235.557 df 3 sign 0.000			
Ever use of any method			
Never used	74.5	25.5	1279
Ever used	50.5	49.5	1771
X^2 178.7 df 1 sign 0.000			
Age			
15-19	61.4	38.6	319
20-24	56.8	43.2	893
25-29	56.9	43.1	819
30-34	63.7	36.3	510
35+	69.5	30.5	509
$X^2$29.419 df sign o.ooo			
Assistance at delivery			
No one	99	1.0	304
Medical personnel	8.4	91.6	1245
Trained birth attendants	86.2	13.8	325
TBAs	99.7	0.3	300
Relative/friend	99	1.0	861
X^2 2416 of 4 sign0. 000			
Children ever born			
1-3 children	52.0	48.0	1778
4+	72.6	27.4	1272
X^2 130.989 df 1 sign 0.000			
Antenatal visits			
No visit	81.6	18.4	163
One visit	80.0	2.0	110
2-3 visits	67.1	32.9	887
4+ visits	54.6	45.4	1890
$x^2$91.4 df 3 sign 0.000			
Region			
Nairobi	22.9	77.1	105
Central	26.8	73.2	257
Coast	67.9	32.1	461
Eastern	49.4	50.6	427
Nyanza	66.2	33.8	545
Rift Valley	67.0	33.0	860
Western	74.4	25.6	395
x^2 27.1.44 df 4 sign 0.000			

Types of place of residence			
Urban	34.0	660	456
Rural	65.3	34.7	2594
x^2 158.861 df 2 sign 0.000			

Source: computed from analysis of KDHS, 1998

Most births to multi porous women were at home. Thus women who had many children were likely to deliver at home mainly because of the experience they have acquired over the years. Over 70 per cent of births to mothers who had more than 4 children occurred at home, while 52 per cent of births to women who had between 1-3 children occurred at home. This finding is consistent with that of Bulut (1995) in a study among low-income women in Istanbul.

From the table there is a significant relationship between type of place of residence and place of delivery. Women in rural areas were more likely to deliver at home. Most urban women delivered at a health facility (66 per cent). About 34 per cent of rural women delivered at a health facility. This finding is in agreement with previous studies where it was found that urban coverage of maternal care was always high. (Akin 1985; Voorhorve. Kars and Van Ginnerken, 1984). As regards region, women in Coast, Nyanza, Rift Valley and Western are likely to deliver at home as opposed to their counterparts in Nairobi, Central and Eastern Provinces respectively.

Antenatal visits are observed to be significantly related to place of delivery. Women who did not attend antenatal clinics were more likely to deliver at home than those who attended. 81.6 per cent of women who did not attend antenatal clinics delivered at home.

4.7.2 Assistance at delivery

It is important that women delivered in a health facility where proper medical attention is given and complications delt with in time. More so, health facilities offer hygienic conditions hence free of infections to both the mother and baby. This section investigates factors associated with assistance at delivery.

From table 4.10 below older women were unlikely to seek any assistance at delivery. 3.5 per cent of women aged 15-19 did not seek assistance at delivery as opposed to 20.9 per cent of women in the age bracket 35 and above. Younger women also tended to seek assistance from medical personnel. The significant role played by relative/friend is also noticed in all age groups. This finding is similar to that of KDHS 1993 that births to younger women are likely to be assisted by medically trained personnel than are births to mothers aged 35 years and over.

As regards children ever born women who had 4 and above number of children were more likely not to be assisted by anyone at delivery. Women who had between 1-3 children mostly sought assistance from medical personnel. This is consistent by earlier studies by Stewart and Sommerfelt, (1990) that younger and lower parity women tend to use services more frequently than older-higher parity women. However, Adeknel et. al, 1989 explains these findings, as due to the greater confidence and experience of the higher parity women coupled with greater responsibilities within the household. Thus children ever born are found to be significantly associated with assistance at delivery.

As is expected, most women who delivered in a health facility were assisted at delivery by medical personnel (95.2 per cent) most women were delivered at home who assisted by either a

friend or relative, interesting enough is that 5.7 per cent of women who delivered at home got assistance from a medical personnel. Only 0.3 per cent of women who delivered in a health facility did not get any assistance at delivery.

Table 4.10 Percentage distribution of assistance at delivery by selected background characteristics

riables	Assistance at delivery					
	Non one	**Medical personnel**	**Trained birth attendants**	**TBA**	**Relative/ friend**	**No. Of cases**
ge						
-19	3.5	40.9	10.7	12.9	32.1	318
-24	5.9	44.8	11.8	10.1	27.4	891
-29	8.6	44.4	10.0	8.3	28.7	816
-34	12.7	38.7	11.3	10.7	26.6	504
	20.9	31.4	9.3	9.3	29.1	506
121.784 df 6. Sign 0.000						
ildren ever born						
3 children	5.2	49.3	10.0	8.9	26.6	1775
children	16.8	29.4	11.7	11.3	30.8	1260
181.889 df 4.sign 0.000						
ace of delivery						
t home	16.4	5.7	15.2	16.3	46.4	1837
t a health facility	0	95.2	3.8	0.1	1.0	1198
2416.33 df4 sign 0.000						
ntenatal visits						
o visit	22.7	20.2	4.9	14.7	37.4	163
ne visit	13.8	27.5	16.5	9.2	33.0	109
-3 visits	11.7	35.8	9.7	11.6	31.3	883
visits	7.9	46.1	11.3	8.7	26.0	1880
108.809 df 2 sign 0.000						
aternal education						
o education	16.9	22.4	7.5	12.7	40.6	362

imary incomplete	10.9	34.8	11.2	11.9	31.2	1933
imary complete	4.8	64.4	11.6	3.5	15.7	688
condary +	0.0	92.3	1.9	0.0	5.8	52
341 df 2 sign 0.000						
pe of place of residence						
ban	3.7	9.9	9.9	3.3	14.9	455
ural	11.1	10.9	10.9	11.0	30.7	2580
174.810 df 8 sign 0.000						
er use of any method						
ver used	13.0	27.7	9.9	14.5	34.9	1276
er used	7.8	50.7	11.3	6.5	23.6	1759
196.006 df 4 sign 0. 000						
egion						
	4.8	76.9	3.8	3.8	10.6	104
irobi	8.2	70.6	3.9	0.4	16.9	255
ntral	4.3	35.6	9.5	8.2	42.3	461
ast	5.4	47.9	15.3	12.0	19.5	426
stern	17.3	34.6	14.7	7.9	25.4	543
anza	7.9	36.4	3.3	16.7	35.8	852
ft Valley	18.8	30.2	23.9	5.3	21.8	394
estern						
518.276 df4.0.000						
rtners education						
o education	19.4	20.4	4.7	13.6	41.9	191
imary incomplete	12.7	31.3	11.8	11.1	33.2	1387
imary complete	7.6	53.9	11.2	7.1	20.2	1011
condary +	4.3	76.1	6.5	5.4	7.6	92
237.6 df sign 0.000						

Source: computed from analysis of KDHS, 1998

The number of antenatal checks is also found to be significantly related to assistance at delivery. Women who had attained 4 and above checks were likely to be delivered by medical personnel. Women (22.7 per cent) who did not go for any checks delivered without any assistance. A majority was also assisted by relative friend (37.4 per cent)

Maternal education (Table 4.10) is also an important factor in decision concerning assistance at delivery. Women who had no education were mostly assisted at delivery by friend/relative. Women who had attained primary complete level of education were mostly assisted by medical personnel just as their counter parts who had above secondary level of education. This observation is found to be statistically significant. Just as maternal education, partner's education was equally important in decisions concerning assistance at delivery. 76.1 per cent of women whose husbands had above secondary education were assisted at delivery by medical personnel where as only 20.4 per cent of women whose husband had no education were assisted by medical personnel. Thus even primary complete level of education increased the likelihood of seeking assistance at delivery from medical personnel.

Most women in the urban areas received delivery assistance from medical personnel (68.1per cent). A mere 3.7 per cent of urban women did not receive any assistance at delivery. However a substantial percentage of rural women received assistance from a medical personnel and friend/relative. With regard to ever use of any method, Women who had never used any method were likely to be delivered by a friend/relative 50.7 per cent of women who had ever used a method were delivered by a medical personnel. Even to these women, relative/friend played a significant role.

As per the region of residence, most women in Nairobi, Central and Eastern province received assistance from medical personnel, this could be due to the fact that these provinces have more health facilities and therefore the distance may not be as a problem. Women from other remaining provinces received assistance from medical personnel too, but to a lesser extent.

Another substantial percentage of women in Nyanza, Coast Rift Valley and Western received assistance from relative/friend.

It is noted that throughout this sub-section relative/friend played a significant role in offering assistance at delivery. The role of trained birth attendants and TBAs is minimal

4.7.3 Antenatal care

Pre-natal care for pregnant women in Kenya reaches well over 90 per cent of pregnant women. Yet it is interesting to find that 55.8 per cent of women who had four and above visits delivered at home. 71.4 per cent of those who had 4 and above visits delivered in a health facility. This in other words means that the high uptake of antenatal checks does not translate into delivering in a health facility.

As is evident, there is a strong significant relationship between children ever born and antenatal visits. Women who had four and above number of children were more likely not to attend prenatal checks as compared to those who had 1-3 children, thus lower parity women were more likely to seek antenatal care than higher parity women. This finding is similar to that of Owino (2000) but different from earlier studies.

In relationship to age, it is interesting to find out that younger women exhibited the same characteristic as older women in their practice of antenatal visits. 7.2 per cent of women in the age category 15-19 did not go for any antenatal checks while 7.5 per cent of women aged 35 and above did not seek any antenatal checks. Women between ages 20-34 constituted the most number of those who had 4 above visits.

Table 4.11 **Percentage distribution of antenatal visits by selected background characteristics**

Variable	Antenatal visits				
	No visit	One visit	2-3 visits	4+ visits	No of cases
Age					
15-19	7.2	6.9	34.2	51.7	319
20-24	5.0	4.6	28.3	62.0	893
25-29	4.6	2.7	26.0	66.7	819
30-34	3.7	2.5	31.0	62.7	510
35+	7.5	2.4	30.3	59.9	509
x^2 42.1724 df. sign 0.000					
Children ever born					
1-3 children	4.7	4.1	27.3	63.9	1778
4+ children	6.3	2.9	31.5	59.3	1272
x^2 13.620 df sign 0.003					
Place of delivery					
At home	7.2	4.8	32.2	55.8	1848
At health facility	2.5	1.8	24.3	71.4	1202
x^2 91.489 df 3 sign. 0.000					
Level of education					
No education	9.9	4.7	27.0	58.4	363
Primary incomplete	5.8	3.9	32.5	57.7	1945
Primary complete	2.0	2.5	22.2	73.3	690
Secondary	0.0	0.0	5.8	94.2	52
$x^2$97.075 df 2 sign 0.000					
Type of place of residence					
Urban	2.9	2.2	28.3	66.7	456
Rural	5.8	3.9	29.2	61.1	2594
X^2 11.234 df 2 sign 0.011					
Ever use of any method					
Never used	8.1	3.9	32.8	55.1	1279
Ever used	3.3	3.4	26.4	66.9	1771
$X^2$59.922 df 3 sign 0.000					
Assistance at delivery					
No one	12.2	13.8	33.9	49.0	304
Medical personnel	2.7	27.5	25.4	69.6	1245
Trained birth attendants	2.5	16.5	26.5	65.5	325
TBA	8.0	9.2	34.0	54.7	300
Relative/friend	7.1	33.0	32.1	56.7	861
$X^2$108.809 df 2 sign 0.00					

Region					
Nairobi	1.9	1.0	21.9	75.2	105
Central	3.9	5.1	19.1	72.0	257
Coast	5.4	3.0	31.7	59.9	461
Eastern	4.7	3.7	29.7	61.8	427
Nyanza	7.0	4.8	33.6	54.7	545
Rift Valley	5.9	3.0	29.4	61.6	860
Western	4.3	3.5	26.8	65.3	395
$X^2$43.840 df 2 sign 0.005					
Partners Education					
No education	11.5	2.1	31.3	55.2	192
Primary incomplete	5.4	3.7	33.9	57.0	1399
Primary complete	3.2	2.4	24.3	70.2	1012
Secondary +	0.0	0.0	13.0	87.0	92
$X^2$89.606 df 2 sign 0.000					

Source: computed from analysis of KDHS, 1998

Maternal education has been noted to be related to antenatal visits. Women who had secondary and above level of education were more likely to attend antenatal checks. Over 94 per cent of these women (secondary + education) had received 4 and above antenatal checks. This high uptake is also seen with women who had primary complete level of education. It is also observed that even women who had no education were likely to seek antenatal care, 58.4 percent of these women (no education) had 4 and above antenatal checks. The relationship between partner's education and number of antenatal visits is similar to that of the mothers education.

Regarding type of place of residence, women in urban areas tended to exhibit a similar pattern of uptake of antenatal visits as women in the rural areas. This means that living in urban or rural

does not influence ones uptake of antenatal visits. This relationship is found to be statistically significant.

Women who had gone for prenatal checks were more likely to be assisted at delivery than those who did not go for any checks. Most women in Nairobi and Central had had 4 and above number of antenatal checks. This accounted to over 70 per cent. Women in the other remaining provinces exhibited a less similar pattern in uptake.

4.7.4 Tetanus toxoid injection

The receipt of tetanus toxoid injection is very important as it guards both the mother and child against tetanus. From the table maternal and partner's education are significantly related to receipt of tetanus toxoid injection. About 16 per cent of women who had no education did not receive any injection this was compared to 13.5 per cent of those who had secondary + and did not receive any injection.

Ever use of any method was also found to be significantly related to tetanus injection. Where as women who had never used any method were more likely to have no injection. 55.1 per cent of those who had ever used a method had had 2 and above injection, these could be due to the fact that these women were already in contact with the health facility i.e. through maternal and child health/ family planning services (MCH/FP).

Type of place of residence was found not to be significantly related to tetanus injection. Thus the uptake of tetanus injection was not influenced by where one stayed.

This study also found that younger women were more likely to go for tetanus toxoid injection than older women. Women who had many children (4 and above) were less likely to go for tetanus toxoid injection.

This observation was found to be statistically significant. These findings are consistent with that of Bulut 1995; dissevelt, 1978; Nginya 1980; Obemeyer 1991; that older higher parity women were less likely to go for tetanus toxoid injection during pregnancy. Receipt of tetanus toxoid injection is seen to be significantly related to antenatal visits, place of delivery and assistance at delivery.

Table 4.12 Percentage distribution of tetanus toxoid injection by selected background characteristics

Variable	Tetanus No. Injections	One injection	2 injections	No. Of cases
Ever use of any method				
never used	12.5	40.8	46.7	1279
Ever used	6.7	38.2	55.1	1771
X^2 38.595 df 2 sign 0.000				
Partners' education				
No education	16.1	44.8	39.1	192
Primary incomplete	8.9	41.8	49.2	1399
Primary complete	6.5	38.0	55.4	1012
Secondary +	6.5	37.0	56.5	92
$X^2$32.582 df 2 sign 0.000				
Maternal education				
No. Education	15.7	38.6	45.7	363
Primary incomplete	9.4	39.8	50.8	1945
Primary complete	4.8	38.3	57.0	690
Secondary +	13.5	38.5	48.1	52
$X^2$39.604 df 3sign 0.000				
Typeof place of residence				
Urban	6.6	39.5	53.9	456
Rural	9.6	39.3	51.1	2594
$X^2$4.473 df 2 sign 0.107				
Region				
Nairobi	9.5	38.1	52.4	105
Central	7.4	26.1	66.5	257
Coast	9.5	38.6	51.8	461
Eastern	6.6	29.3	64.2	427
Nyanza	11.7	52.1	36.1	545
Rift valley	10.0	41.7	48.3	860
Western	7.1	37.0	55.9	395
$X^2$11.477 df 2 sign 0.000				
Antenatal visits				
No visits	86.5	4.9	8.6	163
One visit	17.3	70.9	11.8	110
2-3 visits	6.3	45.8	47.9	887
At visits	3.3	37.4	59.3	1890
$X^2$1356.144 df 2 sign 0.000				
Assistance at delivery				
No one	13.5	42.8	43.8	304

Medical personnel	6.3	35.9	57.8	1245
Trained birth attendants	6.5	37.8	55.7	325
TBAs	13.0	45.7	41.3	300
Relative/friend	11.5	41.6	46.9	861
$X^2$63.010 df 2 sign 0.000				
Place of delivery				
At home	11.3	42.5	46.2	1848
At a health facility	5.8	34.4	59.8	1202
$X^2$62.699 df 2 sign 0.000				
Age				
15-19	11.9	32.0	56.1	319
20-24	9.6	34.4	56.0	893
25-29	7.3	43.3	49.3	819
30-34	7.6	46.9	45.5	510
35+	11.0	38.5	50.5	509
$X^2$39034 df 3 sign 0.02				
Children ever born				
1-3	8.8	35.3	55.9	1778
4+	9.7	44.9	45.4	1272
$X^2$33.680 df 2 sign 0.000				

Source: computed from analysis of KDHS, 1998

4.8 Conclusion

It is evident from the study that there are no uniform patterns of using maternal health services rather women exhibited switching behaviors. There was no consistency in use. Certain variables also came out as being related to fertility Intentions, for example ever use of contraceptives. certain maternal health variables are also associated with fertility intentions. From the study, contraceptive use is also found to be strongly related to maternal health services utilization. Various factors such as age, education, and partner's education were also significant to utilization of maternal health services. From this sub-section (Chapter) women with secondary and above level of education are more likely to utilize maternal health services. More so women who

partner's had the same level of education were also likely to utilize the services. This could be due to the fact that they are economically able and therefore can afford these services. Higher parity women were less likely to make use of these services. This could be due to the fact they are experienced and can do without the services. From the study younger women stood a greater chance of using the services as they are mostly first timers and inexperienced. For example younger women are more likely to deliver in hospitals since chances are that this is a first birth which is termed risky hence needs assistance.

CHAPTER FIVE.

SYNERGISTIC LINK BETWEEN UTILIZATION OF MATERNAL HEALTH SERVICES, CONTRACEPTIVE USE AND FERTILITY INTENTIONS

5.1 Introduction

In this chapter, the results of logistics regression analysis are presented and discussed. The main objective of the analysis undertaken is to determine the synergistic link between utilization of maternal health services, fertility intentions and contraceptive use. All the variables included in the cross tabulation analysis in chapter 4 were entered in the multivariate analysis.

The results of the multivariate logistic regression are given in this section. Enter regression method was used for model building. In this approach all variables are entered into the equation and retained throughout. The study employed five dependent variables in the analysis, namely fertility intentions, place of delivery, assistance at delivery; antenatal visits and tetanus toxoid injection. In this chapter, the first regression is carried out between fertility intention as a dependent variable and the maternal health variables to determine the linkage of how utilization of maternal health services affect fertility intentions. Background variables were then introduced at a time to see if there inclusion into the equation had an effect on the observed relationship between fertility intentions and maternal health variables alone.

Other sets of regressions were run between various maternal health variables (serving as dependent variables) and the control variables. In this model each of the dependent maternal health variables is first run with fertility intentions and ever use of contraceptives. The other background variables were included into the equation at a time to see if their inclusion affects the

observed relationship between the specific maternal health variables and fertility intentions and ever use of contraceptive. The first regression between the specific maternal health variable and fertility intention and ever use of contraceptives was run to determine if there is a synergic link between utilization of maternal health services ever use of contraceptives and fertility intentions. In this first regression fertility intentions served as the dependent variable.

Fertility intention was first run with the maternal variables. A set of other variables was then introduced i.e. maternal age ever use of contraceptives and children ever born to see if the observed outcome still stands. In the third model socio-economic variables were introduced and lastly community environmental variables were introduced in model 4

The second type of regression is between the maternal health variables each serving as dependent variable and fertility intentions and contraceptive use. This is mainly to determine the synergetic link between them. A set of demographic variables were then introduced i.e. Age and children ever born. At model 3 maternal and partner's education are introduced to see if they have an effect on the observed relationship in model 3. Lastly aset of community environmental variables are introduced.

5.2 Logistic Regression Results

5.2.1 Fertility intentions

The results of the logistic regression on fertility intentions are in table 5.1 below. From the table, receipt of assistance from trained birth attendance has an effect on desire to have another child. In model 1, women who received assistance from trained birth attendants were more likely to desire another child compared to those who received assistance from medical personnel. This

observation is only significant at model 1 and in the other models when other variables are introduced it becomes insignificant. In model 2 and 3 it reduces the chances of having another child.

Table 5.1: ODDS RATIO SHOWING THE EFFECT OF MATERNAL HEALTH VARIABLES AND BACKGROUND VARIABLES ON FERTILITY INTENTIONS

EXPLANATORY VARIABLES	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Assistance at delivery				
Medical personnel (reference)				
No one	1.0856	1.1413	1.1892	1.1925
Trained birth attendants	1.7424***	0.9424	0.9646	1.0154
TBAS	1.0917	1.0465	1.0942	1.1725
Relative / friend	0.9512	0.9416	0.9348	0.8723
Place of delivery				
At home (reference)				
At a health facility	1.0961	0.9665	1.0267	1.2285
Antenatal visits				
No visit (reference)				
one visit	1.1790	1.2648	1.1072	1.1174
2-3 visits	0.9936	1.6287**	1.3144	1.3076
4+ visits	1.0535	1.1122	1.0980	1.0994
Tetanus toxoid				
Injection				
No injection (ref)				
One Injection	0.9876	0.9295	1.0816	1.0709

2+ injections	1.2069	1.0345	1.0823	1.0960
Ever use of contraceptive				
Never used (ref)				
Ever used		1.2212**	1.3251***	1.2289**
Age				
35+(reference)				
15-19		0.1006***	0.0493***	0.0492***
20-24		0.1294***	0.0984***	0.0971***
25-29		0.2440***	0.1999***	0.1990***
30-34		0.3664***	0.3099***	0.3072***
Children ever born				
1-3 children (reference)				
4+children		2.7868***	3.1188***	3.3538***
Partner's education				
Secondary education (ref)				
No education			0.6829	0.6535
Primary incomplete			0.8449	0.8391
Maternal education				
Secondary education (ref)				
No education			0.8482	0.8720
Primary incomplete			1.2577	0.1251
Type of place of residence				
Rural (reference)				
Urban				1.8220***
Region				
Nairobi (reference)				
Central				1.2086

Coast	0.6958
Eastern	1.2687
Nyanza	0.7486
Rift Valley	1.0762
Western	0.6171

Source: Computed from analysis of KDHS 1998

Note: *Significant at P < 0.10 ** P < 0.05 * ** P < 0.01

Overall percentage: 72.5%

Log likelihood = 2753.231

With regard to no antenatal visits, receipt of one antenatal visit was found to have a positive effect on desire for another child. Receipt of one visit increases the likelihood of having another child in all the four models. This finding was also true for receipt of four and above visits. Having received 2-3 visits had negative effect for desire for another child for model one. It reduced the odds of having another child by a factor of 0.9936 for model 2, 3 and 4 it had a positive effect on desire for another child. It increased the likelihood of having another child compared to no visit. However this observation was only statistically significant for model 2 when other variables were introduced at model 3 the significance at model 2 disappeared.

The first variables that were introduced at model two were ever use of contraceptives, maternal age and children ever born. When introduced they rendered the only significant category of maternal health variable insignificant. This means that the maternal health variables i.e. place of delivery, assistance at delivery. Tetanus toxoid injection and antenatal visits could be working through other variables to influence fertility.

In relation to never use of a contraceptive method, ever use of contraceptive method affects the desire to have another child, throughout the models. The study found that ever use of a contraceptive method increases the likelihood of having another child. It increased the odds of having another child by a factor of 1.2212, 1.3251 and 1.2289 for models 2,3, &, 4 respectively. Thus women who use contraceptives are more likely to have another child except they could delay the timing. This observation is statistically significant

All the categories of maternal age were found to an have effect on desire for another child throughout the models in relation to the reference category (35+). All the categories of age were found to reduce the chances of having another child in relation to the reference category. Age thus reduces the likelihood of having another child. This in other words means that as a woman grows older, the desire to have another child diminishes, this could be due to the fact they have attained there desired family sizes. This observation is statistically significant throughout the models

Compared to the reference category, having 1-3 children, having four and above number of children has a positive impact on desire to have another child. Having four and above children increases the likelihood of having another child by 2.7868, 3.1188 and 3.3538 for models 2, 3 & 4. This implies that women who have four and above number children are more likelihood to have another child compared to those have 1-3 children. This finding is statistically significant throughout the models.

Compared to the reference category living in rural areas, living in urban has an impact on the desire for another child. Living in urban increases the likelihood of having another child by a

factor of 1.8220. This means that women living in urban areas are 1.8220 times likely to have another child compared to those women living in the rural. This observation is statistically significant.

5.2.2 Place of Delivery.

The table 5.2 shows that with regard to having no more children, the desire to have another child has positive effect on place of delivery. The desire to have another child increases the likelihood of hospital delivery. This means that women who desire to have another child are likely to deliver in a health facility. This observation is statistically significant at model 1. At model two when demographic variables are introduced, the significance of this variable is completely pulled down. This implies that the said variable could be acting through some other intermediate variables on place of delivery. Model 2 and 3 shows that the desire to another child has a reducing effect on hospital delivery. For the fourth model, having another child increases the odds of hospital delivery. This is after the inclusion of socio-economic variables. From the findings it is right to conclude that fertility intentions could be having an effect on place of delivery, except this effect could be working through other variables. At models 2 and 3 the observed outcome in model 1 is pulled down.

As compared to never use of contraceptives, ever use throughout the four models has a positive effect on hospital delivery. The use of contraceptives increases the likelihood of delivery in a hospital by a factor of 2.9024, 2.7430, 2.2.300 and 1.8004 for models 1,2,3&4. This finding could be explained in the sense that contraceptive are normally provided in hospitals and a woman who goes for this services has a higher chance of going for delivery at the same place. These observations stood as statistically significant throughout the models even when other

variables were introduced.

Table 5.2 Odds Ratios showing the effect of Selected Background Variables on Place of Delivery.

Explanatory Variable	Model 1	Model 2	Model 3	Model 4.
Fertility intentions				
Have another child	1.2230***	0.8583	0.8757	1.0331
Ever use of contraceptives				
Never used (reference)				
Ever used	2.9024***	2.7430***	2.2300***	1.8004***
Maternal age				
35+ (reference)				
15-19		0.5615***	0.7896	0.8097
20-24		0.5819***	0.6466**	0.6284**
25-29		0.7975	0.7989	07979
30-34		0.9362	0.9406	0.8821
Children ever born				
1-3 children (reference)				
4+ children		0.2686***	0.3660***	0.4647***
Partner's education				
Secondary +(reference)				
No education			0.4087***	0.4197***
Primary incomplete			0.5800***	0.5620***
Maternal education				
Secondary + (reference)				
No education			0.3421***	0.3568***
Primary incomplete			0.4008***	0.3772***
Region				
Nairobi (reference)				
Central				4.0359***
Coast				0.5548**
Eastern				1.6535
Nyanza				0.8984
Rift Valley				0.9432
Western				0.4452**

Type of place of residence	
Rural (reference)	
Urban	3.1451***

Source: Computed from analysis of KDHS 1998.

Overall percentage = 73.6%

Log likelihood = 2732.831

Note: significant at P<0.01, ** P< 0.05, *** P<0.10.

All the category of maternal age has an impact on hospital delivery as compared to ages 35 and above. This observation is statistically significant for age group 15-19 for model 2 but when other variables were introduced in model 3 the significance is watered down. For age group 20-24 the observation was significant throughout the models. For age groups 25-29 and 30-34 the findings were not statistically significant. Thus no age differences exist in the propensity to deliver in hospital. This theoretically means that age is not a determinant of hospital delivery. Thus age reduces the chances of a woman delivering in hospital.

As compared to having 1-3 children, having 4 and above number of children reduces the chances of delivery in a hospital. This in other words means that women who have four and above number of children were less likely to deliver in a hospital. This finding is in agreement with the cross tabulation results that higher parity women are more likely to deliver at home. This finding throughout the models was highly significant. This could be due to the fact that these high parity women have attained their desired family sizes and might not need these services.

Table 5.2, shows that partner's education has an effect on hospital delivery. Women whose partners had no education and those whose partner' had primary incomplete level of education

were less likely to delivery in a hospital as compared to the reference category. Even when more variables were added into the equation this finding still stood out as very significant.

As compared to secondary+ level of education, women who had no education and those who had primary incomplete level of education were less likely to deliver in a hospital. Primary incomplete level of education reduces the chance of a woman delivering in a hospital. This finding was statistically true throughout the models.

Of all the regions under study, it is only Central that had statistically significant effect on hospital delivery as compared to the reference category Nairobi. Women living in Central were 4.0359 times likely to deliver in hospitals compared to women living in Nairobi. Women living in Coast, Nyanza, Rift Valley and Western were less likely to deliver in hospital. This finding was statistically significant for Coast and Western provinces.

With regard to living in rural, living in urban has some effect on hospital delivery. Living in urban increases the odds of hospital delivery by 3.4501 times compared to living in rural. Thus Women living in urban are 3.4501 times likely to deliver in a hospital than Women living in rural areas.

5.2.3 Assistance at delivery

The desire to have another child, in comparison to having no more affects receipt of assistance at delivery as shown in able 5.3 below. Desire to have another child increases the likelihood of receiving assistance when delivering Thus women who desire to have another child are 1.8452 times likely to receive assistance at delivery compared to those who desire to have no more. This

observation is statistically significant for model I. In model 2 when other variables (demographic) are introduced, it becomes highly insignificant. Model 2 & 3 show that desire to have another child reduces the likelihood of receiving assistance at delivery, while in model 4 after the inclusion of other variables, it increases the likelihood of receipt of assistance.

Ever use of a contraceptive affects receipt of assistance at delivery as compared to never use of contraceptive method. Ever use of a contraceptive method increases the odds of receipt of assistance by a factor of 1.8267, 1.8750, 1.6590 and 1.6046 respectively for models 1,2,3 & 4. This means that women who use a contraceptive method are 1.8267 times likely to receive assistance at delivery compared to those who never use contraceptives.

All categories of maternal age are in away related to receipt of assistance at delivery. Age increases the likelihood of receipt of assistance at delivery. However, the magnitude of increases decreases as age increases. Thus in essence the finding shows that younger women are more likely to receive assistance at delivery than older women. This observation remained statistically significant even at the introduction of other variables at model 3 and 4.

TABLE 5.3: ODDS RATIOS SHOWING THE EFFECT OF SELECTED BACKGROUND VARIABLE ON ASSISTANCE AT DELIVERY

EXPLANATORY VARIABLE	MODEL1	MODEL 2	MODEL 3	MODEL 4
Fertility intentions				
Have no more (reference)				
Have another	1.8452***	0.9210	0.9336	1.0076
Ever use of contraceptives				
Never used (reference)				

Ever used	1.8267***	1.8750 ***	1.6590***	1.6046***
Maternal age				
35 + (reference)				
15-19		3.6537***	4.3965***	4.6087***
20-24		1.9663***	2.1310***	2.2656***
25-29		1.8030***	1.9516***	1.9551***
30-34		1.5315**	1.6002**	1.6281**
Children ever born				
1-3 children (reference)				
4+ children		0.4052***	0.5185***	0.6040**
Maternal education				
Secondary +(reference)				
No Education			0.6016**	0.3637***
Primary incomplete			0.4608***	0.4171
Partner's education				
Secondary + (reference)				
No education			0.7037	0.5677**
Primary incomplete			0.8227	0.8226
Region				
Nairobi (reference)				
Central				1.2544
Coast				4.7305**
Eastern				2.6871
Nyanza				0.8442
Rift Valley				2.2198
Western				0.6323
Type of place of residence				
Rural (reference)				
Urban				1.5142

Source: Computed from analysis of KDHS 1998

Note:* Significant at P<0.01,P <0.05, ***P< 0.10**

Overall percentage = 89.8%

Log likelihood = 1458.385

With regard to having 1- 3 children having 4 and above number of children reduces the likelihood of receiving assistance at delivery. This observation shows that women who have 4 and above children are less likely to receive assistance at delivery compared to those who have 1-3 children. This could be due to the fact that because of many births high parity women are more confident and might not require any assistance. Even after the introduction of other variables this variable stood out as significant throughout the models.

In comparison to secondary education, having no education has an effect on assistance at delivery. It reduces the odds of receiving assistance at delivery. Thus women who have no education are more likely not to be assisted at delivery. This observation is statistically significant at model 4 when other variables are introduced. Primary incomplete education also reduces the chances of receiving assistance at delivery. This finding is statistically significant at model 3 and when other variables are introduced it becomes insignificant.

Partner's education too has an effect on assistance at delivery. Compared to secondary education, no education and primary incomplete level of education reduces the chances of receiving assistance at delivery. Thus women whose partners have no education and those whose partner's have primary incomplete education are less likely to be assisted at delivery. This finding is only statistically significant at model 4 for one category of partner's education that is, no education.

Living in Nyanza and Western has an influence on receipt of assistance at delivery compared to living in Nairobi. Women living in these two provinces are less likely not to receive any assistance when delivering. This observation is not statistically significant. Living in Coast Province increases the chances of receiving assistance at delivery by a factor of 4.7305. Thus women living in Coast are 4.7305 times likely to be assisted at delivery in comparison to women living in Nairobi.

5.2.4 Antenatal Visits.

As seen earlier with the other dependent variables, ever use of a contraceptive in this model has an effect on antenatal visits attendance compared to never use of any contraceptives. In all the four models ever use of a contraceptive increased the likelihood of attending antenatal care. This pattern was not affected by the inclusion of variables at various stages. Thus women who use any contraceptive have a higher chance of attending antenatal clinics than those who do not use any method.

Table 5.4 Odds Ratios showing the effect of Select Background Variables on the number of Antenatal Visits.

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Fertility intentions				
Have no more children (reference)				
Have another children child	1.2069	1.0801	1.0947	1.1140
Ever use of contraceptives				
Never used (reference)				
Ever used	2.5975***	2.3704***	1.8041***	1.7433***

Maternal age			
35+ (reference)			
15-19	0.6865	1.11902	1.1696
20-24	0.8904	0.8799	0.8751
25-29	1.1574	0.9315	0.9219
30-34	1.7638	1.6136	1.6164
Children ever born			
1-3 children (reference)			
4+ children	0.5888**	0.6659	0.6972
Partner's education			
Secondary + (reference)			
No education		0.6324	0.6257
Primary incomplete		0.9486	0.9715
Maternal education			
Secondary (reference)			
No education		0.1679***	0.1541***
Primary incomplete		0.2689***	0.2745***
Region			
Nairobi (reference)			
Central			1.2227
Coast			1.4658
Eastern			1.2533
Nyanza			0.9488
Rift Valley			1.3800
Western			1.4944
Type of place of residence			
Rural (reference)			
Urban			1.4962

Source: Computed from analysis of KDHS 1998

Note: * significant at P<0.01, **P<0.05, *** P<0.10

Overall percentage = 95.3%

Log likelihood = 891.173

In comparison to having 1-3 children, having 4 and above children has an impact on antenatal visits attendance. Having 4 and above children reduces the chances of attending antenatal clinics in all the models, but this is only significant at model 2. When other variables are added at model 3 & 4, the observation becomes insignificant.

In reference to secondary education, all the categories of maternal education have an effect on attendance of antenatal visits. Women with no education and those with primary incomplete education were less likely to attend antenatal visits. This observation is statistically significant throughout the models.

5.5 Tetanus Toxoid Injection.

As compared to never use of contraceptive method, ever use of contraceptive is significantly related to receipt of tetanus toxoid injection. Ever use of a method enhances the chances of receiving tetanus toxoid injection. This means that women who use contraceptives are more likely to receive tetanus injection than their counterparts who do not use any contraceptive method.

TABLE 5.5: ODDS RATIOS SHOWING THE EFFECT OF SELECTED BACKGROUND VARIABLES ON UPTAKE OF TETANUS TOXOID INJECTION.

Explanatory Variable	Model 1	Model 2	Model 3	Model 3
Fertility intentions				
Have no more children (reference)				
Have another child	1.0349	1.0058	1.0790	1.0875
Ever use of a contraceptive				
Never used				
Ever used	1.9885***	1.8484***	1.6154***	1.5287***

Maternal Age			
35+ (reference)			
15-19	0.6890	1.0065	0.9891
20-24	0.7850	0.7615	0.7486
25-29	1.1177	0.9422	0.9404
30-34	1.1662	1.0451	1.0278
Children ever born			
1-3 children (reference)			
4+ children	0.7774	0.8883	0.9207
Maternal Education			
Secondary + (reference)			
No education		0.3342***	0.3068***
Primary incomplete		0.5708**	0.5723**
Partner's Education			
Secondary + (reference)			
No Education		0.8043	0.7924
Primary incomplete		1.0969	1.0920
Region			
Nairobi (reference)			
Central			3.1147**
Coast			2.9540**
Eastern			3.2776**
Nyanza			2.0948
Rift Valley			2.6229**
Western			3.3219**
Type of place of residence			
Rural (reference)			
Urban			1.5029

Sources: Computed from Analysis of KDHS, 1998

Note: *Significant at P <0.01, **P<0.05, ***P>0.10

Overall percentage: = 91.8%

Log likelihood = 1378.159.

In reference to secondary and above education, all the categories of maternal education have an significant effect on receipt of tetanus toxoid injection. Having no education and having primary incomplete education reduces the odds of receiving tetanus toxoid injection. Women who have no education and those who have primary incomplete education are less likely to receive tetanus toxoid injection. This difference is statistically significant.

The table further shows that in comparison to Nairobi, living in all the other remaining six provinces increase the odds of receipt of tetanus toxoid injection. As compared to Nairobi, living in Central, Coast Eastern, Nyanza, Rift Valley and Western increases the chances of receiving tetanus toxoid injection thus women living in this provinces are more likely to receive tetanus injection compared to their counterparts living in Nairobi. This finding is statistically true for all the provinces except for Nyanza.

5.3 CONCLUSION

From this subsection of the study we can conclude that there is a relationship between some of the maternal health variables and fertility intentions except this relationship could be working through the background variables that were introduced into the equation. For example at model 1 some of the maternal health variables and fertility intentions have a relation but when other variables are included at model 2 this significance is withered. More so in this sub section a strong relationship between contraceptive use and utilization of maternal health services and fertility is realized.

CHAPTER SIX

Summary of finding, Conclusion and Recommendations

6.1 Introduction

This chapter deals with the summary of the findings, conclusion and recommendations. The study aimed at identifying some of the socio-economic, demographic and community/environmental factors which influence pattern of utilization of maternal health services and fertility intentions

The study set out to achieve the following objectives

1. To establish the pattern of use of maternal health services.
2. To establish consistency in use for those women who gave birth to at least two children prior to the survey.
3. To establish determinants of utilisation of maternal health services and fertility intentions.
4. To establish the link between utilization of maternal health services, fertility intentions and contraceptive use.

To accomplish the general and specific objective of the study, it was hypothesized at the conceptual level that there are certain demographic, socio-economic and environmental factors that are likely to affect, modify or promote patterns of utilization of maternal health services and fertility intentions

Simple percentages were used to describe the study population. Cross tabulation was used to show the association between maternal health services and each of the selected background characteristics of women, and on the other hand the association between maternal health variables, selected background variables and fertility intentions.

The relationship between the various dependent variables was analyzed using logistic regression method. The dependent variables included fertility intentions, tetanus toxoid injection, place of delivery, assistance at delivery and antenatal visits. The independent variable for the study included maternal age, type of place of residence region of residence, maternal education, partner's education, children ever born and ever use of any contraceptive method.

6.2 Summary of findings.

The objective of the study was to establish the patterns of utilization of maternal health services, factors that determine utilization and the effect of various maternal health variables and selected background variables on fertility intentions. Therefore the patterns, levels and determinants of utilization of maternal health services were studied.

In Kenya, the overall pattern of utilization of maternal health services varied. 87.6 per cent of women received antenatal care by professional for both births while 5.9 per cent received the same care for the second last child and not the last child. 3.9 per cent did not receive any antenatal care by professional. 36.4 per cent of women received tetanus toxoid injection for both the births. 4.1 per cent did not receive any tetanus toxoid injection. 7.6 per cent of women also received the injection for just the second last child and not the last. Thus there was no consistency in the use of maternal care services instead women exhibited switching behaviors.

According to the cross tabulation results, factors that influence maternal health services utilization included maternal education, partner's education, ever use of any contraceptive method, children ever born, region of residence, type of place of residence and maternal age. This is consistent with earlier studies that for example maternal education will determine a woman's use of place of delivery and assistance at delivery McCarthy and Maine (1987).

The cross tabulation further showed that fertility intentions are influenced by ever use of any contraceptive method, partner's education, maternal education, children ever born, maternal age and region. Insignificant in this finding was type of place of residence. Thus residing in either rural or urban area does not influence fertility desires. The maternal health variables that had a significant influence on fertility intention included, tetanus toxoid injection and assistance at delivery. The other maternal health variables were not significantly associated with fertility intentions.

The findings further shows that most women delivered at home as opposed to health facility. More so most women did not receive assistance at delivery from trained persons hence exposing them to high risk of death. These findings have implications for strategic intervention in that place of delivery and assistance at delivery should be encouraged.

To find the synergistic link between utilization of maternal health services, contraceptive use and fertility intentions a logistic regression was carried out. The first logistic regression between fertility intentions and the maternal health variables found out that only assistance at delivery could affect ones fertility decisions. The category of assistance at delivery, that is trained birth

attendants was only significant at model, 1. However, the variable was not significant when other variables were introduced in model 2.

Contraceptive ever use, age, children even born and type of place of residence were also important factors in determining fertility intentions. Contraceptive usage increases the likelihood of having another child as compared to none use of contraceptive. This could be due to the fact that women who use contraceptives only delay births but are likely to continue child bearing later. Secondly, it was found that women who had 4 and above children were more likely to have another child as compared to those who had 1-3 children.

Subsequently, age was also an important factor regarding fertility decisions. That is ones age determines whether they will have another child or not. For example the older the woman the lower the likelihood of such a woman having a child.

Type of place of residence was also another significant determinant of desire for another child. Women who lived in urban areas were more likely to desire another child compared to those who lived in the rural areas.

The desire to have another child was found to be significantly related to place of delivery. In model 1 the desire to have another child was found to affect ones decision on place of delivery. Women who intended to continue child bearing were more likely to deliver in hospital. With the inclusion of other variables in models 2, 3 and 4, it no longer remained significant.

The use of contraceptives has a strong effect on hospital delivery. Women who use contraceptives are more likely to deliver in health facilities as compared to those who do not use contraceptives.

Age was found to be an important factor in Determining place of delivery. Younger women were more likely to deliver in a health facility compared to the older women. It was also found out that higher parity women were not likely to deliver in a hospital as compared to lower parity women. In all the three models this observation remained highly significant

Women whose partners had no education and those whose partner's had primary education were less likely to deliver in a health facility, this finding was also the same for women who had no education and those who had primary education. Thus education is an important determinant of place of delivery.

From the study it was found that living in Central Province increases the likelihood of delivering in a hospital, while living in Coast and Western provinces lessens the chances of delivering in a health facility. Type of place of residence also served to affect the choice of place of delivery. Women living in urban areas were more likely to deliver in a hospital compared to women living in rural.

On the variable assistance at delivery, the desire to have another child was found to significantly affect it. However, with the inclusion of other variables at model 2 the significance of desire to have another child on assistance at delivery was lowered.

Ever use of contraceptive served to affect choice of assistance at delivery. The results reveal that women who use contraceptives are most likely to be assisted at delivery than their counterparts who do not use any contraceptive method.

According to the study age was found to be an important determinant of assistance at delivery. All the categories of age were found to increase the likelihood of receiving assistance at delivery. However the log odds of receipt of assistance decreases as age increases.

Another important determinant of receipt of assistance at delivery was children ever born. Women who had four and above children were not likely to receive any assistance when delivering.

Both maternal and partner's education had a negative effect on assistance at delivery. Women who had no education and those who had primary education were less likely to seek assistance when delivering. Also women whose partners had no education and those whose partners had primary education exhibited the same behavior. However the finding was not statistically true for partner's education.

Of all the regions under study it was only Coast that was a significant determinant of receipt of assistance at delivery. Living in the other remaining regions either increased or decreased the odds of receipt of assistance at delivery but these observations were not statistically significant.

From the study, it was found that ones desire to have a child is not a significant determinant of her antenatal care attendance. This theoretically means that women who expressed desire to have another child were not likely to attend antenatal visits.

Women who used contraceptives were likely to attend antenatal visits as compared to those who do not use any contraceptives. In the study, it was found that age was not a significant determinant of whether one would attend antenatal clinics; this was throughout the four models. The number of children ever born reduced the chances of attending antenatal clinics. Women who had 4 and above children were less likely to attend antenatal clinics.

The level of education of the mother affects the attendance of antenatal clinics. Women who had no education and those who had primary education were less likely to attend antenatal visits. Partner's educational level was not a significant determinant of antenatal clinic attendance. Type of place of residence and ones province did not determine whether she would attend antenatal visits or not.

A significant variable in the uptake of tetanus toxoid injection was contraceptive use. Women who used contraceptives were more likely to receive tetanus injection than their counterparts who do not use any contraceptive method.

From the study, the desire to have another child is not a significant determinant of uptake of tetanus toxoid injection. That is women who desired to have another child were not likely to receive tetanus toxoid injection.

Age was not an important factor in predicting uptake of tetanus toxoid injection. This in other words means that ones age could not determine whether she would uptake tetanus toxoid injection or not.

Women who had no education and those who had primary education were not likely to go for tetanus toxoid injection. Having no education and primary education reduced the chances of tetanus toxoid injection.

Region of residence was also an important determinant of uptake of tetanus injection. Women who lived in Central, Coast, Eastern, Rift valley and Western were more likely to uptake tetanus toxoid injection.

However, from the study type of place of residence, partner's education and children ever born were not significant determinants of tetanus toxoid injection.

6.3 Conclusion

In conclusion, significant switching of behavior in utilization of maternal health services among Kenyan women exists. Factors determining ones fertility intentions were contraceptive use, age, children ever born type of place of residence and region of residence. Determinants of maternal health services utilization included age children ever born, contraceptive use, maternal education, partner's education region of residence and type of place of residence. The study found out that there is synergistic link between utilization of maternal health services, contraceptive use and fertility intentions.

6.4 Recommendation

The study has illustrated that wide disparities characterize utilization of maternal health services and fertility intentions. Various factors are associated with the disparities.

6.4.1 Recommendation for policy

- The study found that there is no uniform pattern of utilization of maternal health services. That is women did not use maternal health services for both children but rather exhibited switching behavior. This therefore means that if the woman did not attend antenatal visits or get tetanus toxoid injection for a particular pregnancy the child in question is at risk including the mother. The study therefore recommends that women be encouraged to use maternal health services for all pregnancies and not just particular one e.g. complications or first births.

- It is also recommended that an expectant mother should get two tetanus toxoid injections for the first birth and one for each of the subsequent births. From the study it is realized that most women had just one injection or none. This means that the mother and the child are not fully protected from tetanus. The study therefore recommends that women be educated on the importance of following the recommended doze.

- The study found that most women, at least 38% had attended less than three antenatal checks. This therefore means that most complications go unnoticed until the time of birth hence putting mother and child at a great risk of death. It is therefore important that the issue of visits is addressed and the laid down number and times of visits be adhered to.

- With regard to place of delivery, the study found out that an overwhelming 60% of women delivered at home. Such women are at great risk should complications arise. It is therefore important that the services should be made more available so that professional care is given and complications dealt with easily.

- Ever use of any contraceptive method was found to be an important factor in the utilization of maternal health services. Women should therefore be encouraged to use family planning as this in turns leads to high level of utilization.
- The study also found that urban women are more likely to use Maternal Health Services as opposed to rural women. This is because Maternal Health Services in

urban areas are more accessible as opposed to rural where women have to walk long distances in search of these services hence are discouraged to utilize them.

- It was evident from the study that women in Coast, Nyanza, Rift valley and Western are more likely to deliver at home than their counterparts in the other provinces. The study therefore recommends that women in these provinces be educated on the importance of hospital delivery.
- It was found from the study that contraceptive use is a major determinant of utilization of maternal health services and fertility intentions. The study therefore recommends that the use of contraceptives be encouraged since it is a determinant variable.

6.4.2 Recommendations for further research.

- Further research needs to be done to explain the patterns of utilization as Maternal Health Services observed in the study. It would be useful to know why women utilize maternal health services for one birth and not the other birth. The present study has not been able to explain these. More analysis by sex of child may be necessary to see whether there was any sex preference in the utilization of services. More so the migratory pattern of the woman should also be looked at to see if this could have affected the patterns of utilization. For example the woman could have had the first birth while living in a place where facilities were available but subsequent births where there were no facilities.

- The relationship between contraceptive use and utilization of maternal health services is another area that needs to be researched on. It was not done in this

research, rather the research only pointed that there is a strong relationship between the two.

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APPENDIX 1: FULL LOGISTIC REGRESSION FOR TABLE 5.1

Variable	B	S.E	WALD	R	No. Of Cases
Assistance at delivery					
Medical Personnel (ref)			2.1936	0.0000	1047
No one	0.1760	0.2245	0.6148	0.0000	259
Trained birth attendants	0.0153	0.1811	0.0072	0.0000	275
TBAs	0.1591	0.1763	0.8141	0.0000	239
Relative / Friend	0.1367	0.1801	0.5761	0.0000	708
Place of delivery At home (ref)					1523
At a health facility	0.2058	0.2166	0.9026	0.0000	1005
Antenatal visits No visit			1.4869	0.0000	118
One visits	0.1110	0.2973	0.1395	0.0000	78
2 – 3 visits	0.2682	0.2807	0.9128	0.0000	739
4+ visit	0.0947	0.1079	0.7709	0.0000	1593
Tetanus toxoid injections					
No injection (ref)			0.8137	0.0000	205
One injection	0.0685	0.2281	0.0903	0.0000	1033
2+ injections	0.0917	0.1022	0.8040	0.0000	1290
Contraceptive use					
Never used (ref)					1001
Ever used	0.2061	0.1062	3.7660	0.0225	1527
Children ever born					
1 – 3 children (ref)					1453
4+ Children	1.2101	0.1264	91.7014	0.1601	1075
Age					
35+(ref)			139.4933	0.1939	341
15-19	-3.0109	0.2962	103.3599	-0.1702	203
20-24	-2.3325	0.2288	103.3599	-0.1707	748
25-29	-1.6144	0.2121	57.9269	-0.1264	756
30-34	-1.1802	0.2165	29.7165	-0.0890	480
Partner's education					
Secondary (ref)			4.5214	0.0122	1079
No education	-0.4255	0.2264	3.5214	-0.0209	161
Primary incomplete	-0.1754	0.1099	2.5474	-0.0125	1288
Maternal education					
Secondary (ref)			6.4274	0.0263	634
No education	-0.1369	0.2130	0.4133	0.0000	268
Primary incomplete	0.2239	0.1261	3.1552	0.0182	1626
Region					
Nairobi (ref)			27.3645	0.0663	86
Central	0.1895	0.3203	0.3498	0.0000	201

Coast	-0.3627	0.2826	1.6477	0.0000	394
Eastern	0.2380	0.3021	0.6206	0.0000	353
Nyanza	-0.2895	0.2957	0.9590	0.0000	451
Rift Valley	0.0734	0.2891	0.0645	0.0000	707
Western	-0.4827	0.3074	2.4654	-0.0115	336
Type of place of residence					
Rural (ref)					2130
Urban	0.5999	0.1573	14.5392	0.599	398
Constant	0.8830	0.4169	4.4850		

-2LL = 2753.231

Chi – Square =744.633

APPENDIX 2: FULL LOGISTIC REGRESSION FOR TABLES 5.2

Variable	B	S.E	WALD	R	No. Of Cases
Fertility intentions					
No more children (ref)					1339
Have another child	0.0326	0.1099	0.0881	0.0000	1202
Contraceptive use					
Never used (ref)					1003
Ever used	0.5880	0.1046	31.5764	0.0931	1538
Age					
35+ (ref)			6.9696	0.0000	343
15 - 19	-02111	0.2517	0.7033	0.0000	203
20 - 24	-0.4646	0.2027	5.2540	-0.0309	750
25 - 29	-0.2258	0.1767	1.6328	0.0000	759
30 - 34	-0.1254	0.1746	0.5162	0.0000	486
Children ever born					
1 – 3 children (ref)					1455
4+ Children	-0.7664	0.1392	30.3314	-0.0911	1086
Partner's Education					
Secondary (ref)			34.6538	0.0948	1080
No education	-1.8683	0.2440	126604	-0.0559	162
Primary incomplete	-0.5762	0.1047	30.3048	-0.0911	1299
Maternal education					
Secondary (ref)			67.1199	0.1360	636
No education	-1.0305	0.2110	23.8493	-0.0800	269
Primary incomplete	-0.9751	0.1203	65.6701	-0.1366	1636
Region					
Nairobi (ref)			133.9555	0.1890	87
Central	1.3952	0.3540	15.5371	0.0630	203
Coast	-0.5891	0.3097	3.6188	-0.0218	394
Eastern	0.5029	0.3302	2.3198	0.0098	351
Nyanza	-0.1072	0.3243	0.1092	0.0000	453
Rift Valley	0.0585	0.3206	0.0333	0.0000	713
Western	0.8092	0.3369	5.7694	0.0332	337
Type of place of residence					
Rural (ref)					2142
Urban	1.2384	0.1575	61.7918	0.1323	399
Constant	0.6472	0.3697	3.697		

-2 LL 2732.831

Chi – Square 681.324

APPENDIX 3: FULL LOGISTIC REGRESSION FOR TABLES 5.3

Variable	B	S.E	WALD	R	No. Of Cases
Fertility intentions					
No more children (ref)					1329
Have another child	0.0075	0.1676	0.0020	0.0000	1199
Contraceptive use					
Never used (ref)					1001
Ever used	0.4729	0.1480	10.2034	0.0701	1527
Age					
35+ (ref)			15.1658	0.0655	341
15 - 19	1.5280	0.4551	11.2701	0.0745	203
20 - 24	0.8179	0.2854	8.2107	0.0610	748
25 - 29	0.6705	0.2176	9.4933	0.0670	756
30 - 34	0.4874	0.2067	5.5582	0.0461	480
Children ever born					
1 – 3 children (ref)					1453
4+ Children	-0.5042	0.2112	5.7001	-0.0471	1075
Partner's Education					
Secondary (ref)			15.5123	0.0830	634
No education	-1.0115	0.3054	10.9726	-0.0733	268
Primary incomplete	-0.8744	0.2290	14.5806	-0.0868	1626
Partner's education					
Secondary (ref)			4.2586	0.0124	1079
No education	-0.5661	0.2764	4.1954	-0.0362	161
Primary incomplete	-0.1953	0.1667	1.3733	0.0000	1288
Region					
Nairobi (ref)			75.6602	0.1952	86
Central	0.2266	0.6186	0.1342	0.0000	201
Coast	1.5540	0.6047	0.6051	0.0525	394
Eastern	0.9885	0.6108	2.6190	0.0192	353
Nyanza	-0.1694	0.5747	0.0869	0.0000	451
Rift Valley	0.7674	05838	1.8658	0.0000	707
Western	-0.4584	0.5835	0.6171	0.0000	336
Type of place of residence					
Rural (ref)					2130
Urban	0.4149	0.3232	1.6483	0.0000	398
Constant	2.0606	0.6336	105762		

-2 LL = 1458.385
Chi – Square 212.313

APPENDIX 4: FULL LOGISTIC REGRESSION FOR TABLE. 5.4

Variable	B	S.E	WALD	R	No. Of Cases
Fertility intentions					
No more Children (ref)					1339
Have another child	0.1080	0.2272	0.2258	0.0000	1202
Contraceptive use					
Never used (ref)					1003
Ever used	0.5499	0.2098	6.8697	0.0714	1538
Children ever born					
1-3 children (ref)					1455
4+ children	-0.3607	0.2849	1.6032	0.0000	1086
Age					
35+ (ref)			4.0854	0.0000	343
15 – 19	0.1567	0.3902	0..0894	0.0000	203
20 - 24	-0.1336	0.3902	0.1169	0.0000	750
25 - 29	-0.0814	0.3104	0.0687	0.0000	759
30 - 34	0.4802	0.3379	2.0193	0.0045	486
Partners education					
Secondary (ref)			2.1251	0.0000	1080
No education	-0.4689	0.3593	1.7028	0.0000	162
Primary incomplete	-0.0290	0.2346	0.0152	0.0000	1299
Maternal education					
Secondary (ref)			14.8668	0.1067	636
No education	-1.8704	0.4854	14.8470	-0.1160	269
Primary Incomplete	-1.2927	0.4177	9.5789	-0.0891	1636
Region					
Nairobi (ref)			2.9725	0.0000	87
Central	0.2011	0.9030	0.0496	0.0000	203
Coast	0.3824	0.8270	0.2138	0.0000	394
Eastern	0.2258	0.8571	0.0694	0.0000	354
Nyanza	-0.0526	0.8362	0.0040	0.0000	453
Rift Valley	0.3220	0.8378	0.1478	0.0000	713
Western	0.4017	0.8689	0.2137	00.000	337
Type of place of residence					
Rural (ref)					2142
Urban	0.4029	0.3979	1.0251	0.0000	399
Constant	3.8302	0.9469	16.3617		

-2LL = 891.173
Chi-square =63.693

APPENDIX 5: FULL LOGISTIC REGRESSION FOR TABLE. 5.5

Variable	B	S.E	WALD	R	No of Cases
Fertility intentions					
No more Children (ref)					1339
Have another child	0.0838	0.1718	0.2381	0.0000	1202
Contraceptive use					
Never used (ref)					1003
Ever used	0.4244	0.1612	6.9347	0.0587	1538
Children ever born					
1-3 children (ref)					1455
4+ children	0.0826	0.2192	0.1422	0.0000	1086
Age					
35+ (ref)			2.1011	0.0000	343
15 – 19	-0.0110	0.3991	0.0008	0.0000	203
20 - 24	-0.2895	0.3080	0.8836	0.0000	750
25 - 29	-0.0615	0.2628	0.0547	0.0000	759
30 - 34	0.0274	0.2639	0.0108	0.0000	486
Partner's education					
Secondary (ref)			1.5547	0.0000	1080
No education	-0.2327	0.2943	0.6256	0.0000	162
Primary incomplete	0.0880	0.1753	0.2521	0.0000	1299
Maternal education					
Secondary (ref)			14.4310	0.0854	636
No education	-1.1814	0.3123	14.3112	-0.0928	269
Primary Incomplete	0.5582	0.2357	5.6101	-0.0502	1636
Region					
Nairobi (ref)			9.8075	0.0000	87
Central	1.1361	0.5401	4.4249	0.0412	203
Coast	1.0832	0.4603	5.5369	0.0497	394
Eastern	1.1871	0.4995	5.6483	0.0505	354
Nyanza	0.7394	0.4730	2.4441	0.0176	453
Rift Valley	0.9643	0.4709	4.1926	0.0392	713
Western	1.2005	0.5044	5.6657	0.0506	337
Type of place of residence					
Rural (ref)					2142
Urban	0.4074	0.2900	1.9732	0.0000	399
Constant	1.7878	0.5513	10.5170		

-2LL = 1378.159
Chi-square = 51.794