**DEMAND FOR MATERNAL HEALTH SERVICES: AN ANALYSIS OF CONTRACEPTIVES UPTAKE IN KENYA**

**BY**

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# DECLARATION

This research report is my original work and has not been presented for a degree in this or any other university.

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This research report has been submitted for examination with my approval as the university supervisor.

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# DEDICATION

I dedicate this research report to my dearest family and friends for being supportive during the time of my studies.

I dedicate this work to my children Darrel & Bianca and pray that this will inspire you to work even harder and virtuously in life.

# ACKNOWLEDGEMENT

# TABLE OF CONTENTS

# LIST OF TABLES AND FIGURES

# LIST OF ABBREVIATIONS AND ACRONYMS

| | | |
|---|---|---|
| AIDS | : | Acquired Immune Deficiency Syndrome |
| ARHD | : | Adolescent Reproductive Health Development |
| CPR | : | Contraceptive Prevalence Rate |
| DHS | : | Demographic and Household Survey |
| IUD | : | Intra-Uterine Devices |
| KNBS | : | The Kenya National Bureau of Statistics |
| LAM | : | Lactational Amenorrhea Method |
| MDGs | : | Millennium Development Goals |
| MoH | : | Ministry of Health |
| NCPD | : | National Council for Population Development |
| NGOs | : | Non-Governmental Organizations |
| NRHP | : | National Reproductive Health Policy |
| WHO | : | World Health Organization |

## DEFINITION OF KEY TERMS

**Contraceptives** - methods (devices or drugs) used to prevent unintended pregnancy, i.e. spacing children or permanently preventing pregnancy, as well as control for high fertility.

**Contraceptive Prevalence Rate (CPR)**—the percentage of women of reproductive age, married or living in union, that use some type of contraceptive method (Bongaarts, et al., 1990).

**Fertility Rate**- The average number of children that are born to a woman over her lifetime.

**The Kenya National Bureau of Statistics (KNBS)** -is a Semi-Autonomous Government Agency established under the Statistics Act, 2006 to collect, compile, analyze, and disseminate socio-economic statistics needed for planning and policy formulation in Kenya.

**ABSTRACT**

Maternal health is one of the Millennium Development Goals (MDGs) for health and despite the continued commitment by the Kenyan government and different stakeholders including donor community to the promotion and provision of adequate reproductive health services, several factors impede the demand for and utilization of reproductive health care as evidenced by the high level of unmet need of family planning, level of unwanted pregnancies and abortions. This study analyzed factors that influence the demand for maternal health services with a main focus on contraceptives uptake in Kenya. To achieve these objectives, the study used both descriptive and binary probit regression model to explore the demographic and socio-economic factors that influence usage of contraceptives in Kenya. The study used secondary data obtained from the recent Kenya Demographic and Health Survey (KDHS, 2014) which has national information on contraceptives uptake. Whereas the default level of testing statistical significance was 95% ($\alpha = 0.05$), the findings indicated that 5 of the 11 independent variables showed high level of significance towards influencing contraceptive use (P-values $< 0.01$). These were: the age of the woman; exposure to maternal education; level of household income (wealth index); cultures and beliefs; and level of access to information (via mass media). On the other hand, 3 of the 11 independent variables showed significance at 95% level. These were: the occupational status of the woman; the size of the household; and gender of the household head. The remaining three variables did not show significance at either 95% or 99% i.e. age at first marriage, marital status and the level of language proficiency. The study recommends that female reproductive health education be introduced to adolescents in schools so that they can use this knowledge to make better and informed decisions. Also, the government of Kenya should aim at bridging the poverty gap that exists and constraints women from poorest wealth quintiles from affording contraceptive services given the high fertility rates that exist in these areas.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background Information

According to the World Health Organization's definition, health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Health is not only considered as an important socio-economic requirement since it also promotes the national welfare and fosters economic prosperity (WHO, 2003). Developing countries have made significant strides with regards to investments in their health sectors through lowered costs of medicine, increased availability of medicines and equipment, enhanced trainings for health workers, and establishment of various health facilities across the country; in an attempt to boost their socio-economic health status (Penchansky & Thomas, 1981). Despite respective efforts indicated by governments, local and international non-governmental organizations on effective access to health care services across the continents, there is sufficient evidence confirming that access to effective health care is a major problem in the developing world (World Bank, 2004). Most deaths which are reported in the world due to conditions for which there exist effective interventions occur in developing countries (Jones, 2003). World Bank (2004), indicated that diarrhea, pneumonia and malaria contributed to approximately 52% of child deaths worldwide of which at least there is a single effective prevention and a single effective treatment.

In assessing the state of the Millennium Development Goals (MDGs) for health, evidence shows reproductive health as a section in the array of health services which is given little attention in most parts of the world (World Bank, 2001). Considering the coverage rates of the antiretroviral therapy for AIDS in South Asia for example is low. Some of other studies indicate that in low and middle-income countries accessibility rate does not exceed 5% (Filmer, Hammer & Pritchett, 2000; Hill, Kirkwood & Edmond, 2003; World Bank, 2004). On the other hand, less than half of pregnant women in general access antenatal check-up and only one-fifth of births are attended by a skilled birth attendant (Shengelia, Murray& Adams, 2003; World Bank, 2004).

Many countries lay much emphasis on primary health care in order to reduce inequities. These include services like immunization, sanitation, access to safe drinking water and safe motherhood initiatives (World Bank, 2010). Early pregnancy is shown to raise the chance of dying in childbirth.

On the same note, Sub-Saharan Africa is reported to have highest adolescent fertility. According to Torrey (1992) more than half the women of reproductive age in developing nations use some form of contraception. Sub-Saharan Africa, however, is found to contain the lowest contraceptive prevalence rate, which has remained at a little over 20% since 2000 (WHO, 2013).Other studies show existence of a close relationship between contraceptive prevalence and fertility (Bongaarts, 1978; Mauldin and Segal, 1988). Apart from contraceptive use, Bongaarts (1978) argues that involvement in sexual union, postpartum non-susceptibility and induced abortion are some of the major determinants of fertility.

## 1.2. General Overview of Maternal Health Status

Sub-Saharan Africa is faced by fertility-related health challenges namely, newborn illnesses, pregnancy and childbirth complications, childhood infections and malnutrition, all of which have a direct impact on the maternal health status and thus socio-economic status of the economy. Maternal health status refers to the health of the woman during pregnancy, at the time of delivery and after delivery. According to McCarthy & Maine (1992), maternal health status includes maternal mortality and maternal morbidity and malnutrition (Alexander et al., 2003). On the other hand, maternal mortality indicates the total number of maternal deaths per 100,000 live births according to WHO (2014b).Therefore, a woman whose death is out of the causes related to or aggravated by the pregnancy or its management is said to be a maternal death, (Nwosu, Urama & Uruakpa, 2012).

Similarly, Wildman (2003) refers maternal morbidity which is an indicator of maternal health status to illness and injury related to pregnancy and childbirth. Percentage of women experiencing a live birth or stillbirth, maternal mortality ratio, skilled birth deliveries, antenatal and postnatal care coverage and the use of modern family planning techniques, are some of other key indicators of maternal health. Other studies for example (Kabubo-Mariara *et al.,* 2009) also uses fertility treatment, distribution of timing of first antenatal visits and the distribution of place of birth. Rapid population growth and high fertility are an obstacle to development rather than a stimulant to economic growth (Schultz, 2007). Lastly, maternal health also considers Body Mass Index (BMI) of an individual to compute underweight, overweight or normal weight of a woman. According to Hiza, et al. (2000) underweight is considered when an individual has a BMI less than 18.5, between 18.5 and 24.9 for normal and obese if BMI above 30.

Almost all (99%) of the approximate 287,000 maternal deaths every year occur in developing countries (WHO, 2013). It is evident that poor maternal and nutritional health status is still a challenge to date. Maternal deaths are caused by factors that can be attributed to pregnancy, poor quality of health services and childbirth. Further, Koblinsky (2003), show women in developing countries to have about 20% chances of dying due to pregnancy related causes.

Mothers are reported to face serious health risks and challenges particularly in developing countries most of which are associated with high fertility rates related to low uptake of contraceptives. For instance, approximately 25% of the Global Burden of Diseases (GDB) in 1990 in Africa was caused by pregnancy health-related complications among women aged between 15 to 49 years (Lule, et al., 2005). Maternal mortality ratio has declined globally by 50 percent in the last two decades which is as a result of global initiatives through the safe motherhood program aimed at reducing maternal morbidity and mortality. A World Health Organization report indicates that the incidence of maternal deaths remains extraordinarily high in many developing countries WHO (2014a) in spite of the national and global efforts at curbing maternal mortality. Moreover, in Africa, one in 26 women of reproductive age dies from a maternal cause, as opposed to one in 9400 in Europe(Ahmed, Creanga, Gillespie, Tsui, PLoS ONE 2010).

Sub-Saharan Africa and Asia are among the areas with the highest cases of maternal mortality which reduces with a declining rate. Several countries in Sub-Saharan Africa have reduced by half the maternal mortality rates with an average rate of 2.6% per year between the period 1990 and 2013 (WHO 2014b) although this rate is far below the rate recommended by WHO of 5.5% in order to achieve the set MDGs (Conde-Agudelo, Belizán & Lammers, 2005). Due to demand for better and improved maternal health status, the demand for facilitating factors like availability of maternity services, contraceptives among other health inputs is inconspicuous.

In Kenya, the latest KDHS (2014) indicates the maternal mortality ratio of 488 per 100,000 live births against the MDG target of 147 per 100,000.

## 1.3. Fertility and Contraceptives use in Kenya

### 1.3.1. Fertility in Kenya

Rapid population growth and high fertility rates have been perceived more as obstacles than stimulants to economic growth and development. According to Kabubo-Mariara, et al. (2009) the general recognition is that rapid population growth decelerates capital accumulation rate. On the other hand, Schultz (2008) argues that fertility is perceived as a determinant of the society's

welfare in that families with more children would commit less time and resources to providing basic care and protection required for their children. Thus, place of residence, low levels of socio-economic development, high rates of infant and child mortality, patterns of social organization and deeply ingrained cultural values contribute to the demand for large families leading to sustained high fertility in Africa (Bertrand, et al., 1993).

According to World Bank (2014) while the world fertility rate as at 2013 averaged 2.5 children, in Kenya it was 4.6, which is relatively high. High fertility rates combined with low birth spacing are among major reasons why malnutrition has remained high (Awiti, 2013). In spite of the slow decline in the fertility rate in Kenya, compared with the world fertility rate of 2.5 children, it is still considered comparatively high. Compared with other East African countries, Kenya was reported to be the second highest after Tanzania which had a fertility rate of 5.43 in 2010.

### 1.3.2. Contraceptive use in Kenya

Contraceptives are methods (devices or drugs) used to prevent unintended pregnancy, i.e. spacing children or permanently preventing pregnancy, as well as control for high fertility. According to the Kenya National Bureau of Statistics (2014), the level of current use of conception is used widely as a measure of success of most Family Planning Programmes. Contraceptive prevalence rate (CPR) refers to the percentage of currently married women who are currently using a method of contraception. The methods of contraception can be grouped into two; Traditional (Rhythm/ periodic abstinence, Withdrawal & Other folk methods) and Modern (Female & male sterilization, Intra-Uterine Devices (IUD), Implants, Injectables, Pill, Male & Female condoms and Lactational Amenorrhea Method (LAM)).

The Kenya National Bureau of Statistics (2014) indicates that modern methods of contraception are the most commonly used i.e. 53% and 5% of traditional methods. Of the modern methods, the most widely used are the injectables, at 26%, implants 10% and pill 8%. This means that 58% of currently married women are using some method whilst 65% of sexually active unmarried women are using a method of contraception. Contraceptive prevalence is highest among women between the ages of 30-34 years and lowest in young women of 15-19 years (KNBS, 2014).

According to the KNBS, (2014), this prevalence increases dramatically with education and only 18% of currently married women with no education are using a method of contraception. Further, the CPR is higher in urban women (62%) as compared to 56% found in rural women. Women with 3-4 children are most likely to be using some method of contraception i.e. at 66%. (KNBS,

2014). Region-wise, still from the KNBS, (2014) women in Central region have the highest CPR of 73% followed by Eastern region with 70% unlike North Eastern region which has the lowest at 3%. 22 counties have a CPR above the national average of 58% and in six of these, nearly 75% of currently married women use a method i.e. Kirinyaga (81%), Makueni (80%), Meru (78%), Machakos (76%), Tharaka Nithi & Kiambu (74%).Trends in contraceptive use from 1989-2014 show a steady increase; KDHS (1989)- CPR of 27%, KDHS (2008-09)- CPR of 46% and KDHS (2014) - CPR of 58%. (KNBS, 2014).

A crude measure of the extent of the need for family planning services is estimated from the proportion of women who want to stop childbearing or who want to space their next birth. It is an estimate since not all women are exposed to the risk of pregnancy and some of them may already be using contraception.

Met need for family planning refers to the women who are currently using a family planning method. Unmet need for family planning refers to; those women who prefer to postpone or stop childbearing but are not using any method of contraception, pregnant women whose pregnancy was mistimed or unwanted or amenorrhoeic women who are not using family planning method and whose last birth was mistimed or unwanted.

Overall, 18% of currently married women have an unmet need for family planning. This unmet need is higher in rural areas (20%) than in urban areas (13%).The unmet need is also higher in married women with no education (28%) whilst this stands at 12% in women with secondary or higher education. Unmet need declines steadily as wealth increases i.e. 29% in the lowest wealth quintile whilst 11% or women in the highest quintile. Of importance to note is that sexually active unmarried women have a higher demand for contraception at 92% and higher level of unmet need of 27 % than that reported in married women (KDHS, 2014).

### 1.3.3. Policies on Contraceptives in Kenya

Since 1957, Kenya has been embracing modern methods of contraceptives through the Ministry of Health (MoH) facilities and Non-Governmental Organizations (NGOs). On the other hand, Kenya became the first country in sub-Saharan Africa to adopt a national population policy in 1967 (MoH, 1996). According to MoPHS's National Reproduction Health strategy 2009-2015, reproductive health is a development issue as it contributes to death and disability that affect many families. Access to reproductive health is crucial to achieving the eight Millennium Development Goals (MDGs), population, development and health goals as well as realizing vision 2030.

There are various policies, guidelines, strategies, goals and targets set in international & national conferences that guide the provision of reproductive health services. It is thus a multi-sectorial approach that would enable these goals to be achieved. In addition, according to the Constitution of Kenya (2010) it provides the overarching legal framework to ensure a comprehensive rights-based approach to health services delivery. It provides that every person has a right to the highest attainable standard of health, which includes reproductive health rights.

The National Reproductive Health Policy (NRHP) was adopted in the year 2007 and its goal is to enhance the Reproductive Health status of all Kenyans by increasing equitable access to reproductive health services; improving quality, efficiency and effectiveness of service delivery at all levels and; improving responsiveness to the client needs. The implementation has been guided by the National Reproductive Health Strategy 2009-2015 (which is a revision of the strategy of 1997-2010). The strategy sets out various strategies of ensuring the NRHP's goal is achieved through strengthening of the health systems, improving efficiency, effectiveness & quality of reproductive health services, increasing access to reproductive health services through the community strategy and targeting groups with special needs (people with disabilities and the "hard to reach", poor and other vulnerable populations).

Thirdly, there is the Adolescent Reproductive Health Development (ARHD) Policy which was developed in 2003. The goal is to contribute to the improvement of the well-being and quality of life of Kenya's adolescents & youth. Kenya is generally a youthful nation with over 61% of its population comprising of persons below the age of 25 years thus making the adolescents and youth very important when looking at a nation's development with regard to such a huge population proportion's health. There are several reproductive health problems that adolescents face such as early pregnancy, school dropout and sexually transmitted infections including HIV/AIDS. Moreover, 51% of the Kenyan population is female yet [1]one in every two married girls and girls with children are neither in school nor working gainfully.

## 1.4. Problem Statement

Low access to family planning services is reported more to be on the increase in many developing countries and especially among women (Ojakaa, 2008). Further, for those who use contraceptives also lack support of their male partners to use them and other family planning services. Therefore, according to Ross and Stover (2001), a review of the program effort in the Kenya family planning

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[1]Adolescent Reproductive Health Development Policy

program in 1998, awarded an increased effort between 1994 and 1998, although more recent inquiries mention two program factors that are related to the levelling off in unmet need and contraceptive use. These include reduced Government and donor funding to the family planning program and the related increased emphasis on HIV/AIDS programs (Westoff and Cross, 2006). Renewed effort to introduce family planning education during antenatal visits could also be related to the significance of contact with health services in determining unmet need. Consequently both young and older women resort to abortion to limit their child bearing despite illegality and security and unsafeness of the process.

Kenyan government has put in place various strategies and policies to facilitate the use of family planning services as a step towards reducing the fertility rates, increasing contraceptive prevalence rate (CPR) and reducing the unmet family planning needs (Ojakaa, 2008). Despite these policy measures, total fertility rate still remains high at 3.9, while CPR for all methods is at 58%. There is an unmet need for family planning amongst married women of 18% meaning that the total demand for contraceptives in Kenya is 76% among married women whilst for the sexually active unmarried women is 92% yet this usage level is not achieved.

Furthermore, according to the KDHS (2014), 15% of women aged 15-19 have already had a birth while 18% have begun child-bearing (had a live birth or are pregnant with their first child). The percentage of women who have begun childbearing increases rapidly with age, from about 3% among women age 15 to 40% among women age 19. This high fertility rate among the youth & adolescents can be attributed to lack of access to needed reproductive health information and services, perceived hostility by service providers who lack the appropriate skills for dealing with adolescents reproductive health problems. The contraceptive use among this age 15-19 is still relatively low i.e. 40.2% whilst in age 20-24 where the youth lie is 53.5% according to the latest KDHS.

## 1.5. Research Questions

a) What are the socio-economic factors that influence uptake of contraceptives in Kenya?

b) What are the demographic factors that influence uptake of contraceptives in Kenya?

c) What are the relevant policy interventions for contraceptives uptake in Kenya?

## 1.6. Research Objectives

The main aim of this study is to analyze factors that influence the demand for maternal health services with a main focus on contraceptives uptake in Kenya. The following were the specific objectives of the study;

a) To investigate the socio-economic factors that influence uptake of contraceptives in Kenya.

b) To investigate the demographic factors that influence uptake of contraceptives in Kenya.

c) To suggest the relevant policy interventions for contraceptive uptake in Kenya.

## 1.7. Justification of the study

Studies have indicated family planning clients as having different needs that is, women who want to delay childbearing; couples who want to space births; and those who want to stop childbearing, (Magadi and Curtis, 2012). Renewed effort to introduce family planning education during antenatal visits could also be related to the significance of contact with health services in determining unmet need. These findings imply that contact with health providers creates more demand for family planning among married women and sexually active unmarried women.

However, the fact that contact with health care providers is significantly associated with decreased total unmet need and unmet need for spacing over a long period of time might be a sign of the discordance between desire to control fertility and actually accessing the services. Therefore, unearthing different factors that are leading to usage of contraceptives in Kenya will lead to relevant policy measures which in turn could see a high upsurge of these services and thus health status of the population. Therefore, the government and the relevant stakeholders may benefit from these study findings in realigning the reproductive health policies through prioritization. Also, the study shall contribute to the literature on the uptake of contraceptives by the students in the library.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1. Theoretical literature

The theory of health production, established that health care is both a consumer good and investment good as proposed and developed by Grossman (1972) and is based on expected utility theory. The Grossman theory of health production model reveals that age, education, health status and income significantly affect the production of health through the demand for health capital. The model further indicates that health is not purchased from markets but rather it is produced.

Considering human capital theory, Grossman suggests that the consumer applies health inputs as investment in health capital which later not only improves consumer's health but also maintains his stock of capital. Grossman maintains that the final goal of a consumer is health output demonstrated by healthy days (Grossman, 2001). This final goal indicates how much time and other resources e.g. money to invest in health stock in order to purchase inputs like contraceptives. Sometimes these inputs may be unaffordable in case of emergencies which leads to increased unmet need and thus increases lack of access to family planning services. Finally, other several factors are claimed to have an influence in households' or individuals' decisions to use contraceptives, including quality of services in health care centers, health care expenditures, individuals income level, education level, age, family size, and number of adults in households among other factors, (Grossman, 2001).

The theory of demand stipulates that there is a relationship between consumer demand for goods and services and their prices. Goods and services have wants satisfying capacity known as utility which is a subjective concept. Demand therefore refers to the willingness as well as ability of the consumer to procure and consume the goods and services and is determined by the quantity demanded, price of the good/service, price of substitutes/ complements, consumer income, tastes and preferences of the consumers, level and age structure of the population and the price expectations of consumers for future time periods. Most countries have been using the expansion of access of women to family planning as their principal strategy. Wide availability of contraceptives leads to increased use and lowered fertility but this is not guaranteed. Women demand for contraceptives is a derived demand from the demand for children. Van de Walle and Foster (1990) find that the high fertility rates prevailing in Sub-Saharan Africa reflect high demand for children. This demand is determined by the costs and benefits associated with the

birth of additional children and the cost of preventing that birth. If the demand for children is sufficiently inelastic to contraceptive availability and price, provision of contraceptives may have no impact on fertility outcomes. Other than price and demand for children, other factors that affect demand for contraceptives include time and money used to travel to and from the health facility, waiting time and methods/consultation costs, quality of service, education level of the woman, tastes and spousal/familial opposition depending on ethnic groups and religion.

## 2.2. Empirical Literature Review

Gwatkin et al. (2003) conducted a study on initial country-level information about socio-economic differentials in health, nutrition and population in 56 developing countries using the Demographic and Household Surveys (DHS) and found out socio-economic disparities in the usage of reproductive health services are still greater. The study revealed that on average, women in the richest quintile are 5.2 times more likely to give birth under the supervision of a doctor, nurse, or midwife than the poorest fifth of women. Average coverage is lowest in South Asia and parts of Sub- Saharan Africa, while inequalities are very strong in most regions with the exception of Eastern Europe and Central Asia. The authors further showed inequalities in the use of contraceptives to be of a similar magnitude. A woman in the richest 20% of households is 4.6 times more likely to use contraceptives than a woman in the poorest 20% on average.

Befeno (2010) conducted a multilevel analysis on determinants of condom use in Zambia. The study used the data from the 2003 Zambia Sexual Behavior Survey and other surveys to conduct multilevel analyses to assess the influence of each of these various characteristics on condom use in Zambia. The study found that condom use significantly increases with interpersonal communication concerning HIV/AIDS, community infrastructural development, and access to condoms, and decreases with population growth rate and density. The study therefore suggested that condom-promotion efforts should be attentive to community-level social norms, population trends, and informal social relationships and interpersonal communication.

Blanc and Way (1998) on examining the sexual behavior and contraceptive knowledge and use among adolescents in developing countries found out that in ten out of the nineteen sub-Saharan African countries, unmarried adolescents constitute more than 50% of all teenage users of contraception. From the descriptive statistics, it was found that few married women who are childless use contraceptives. The authors linked and concluded that the findings may be due to cultural norms, which expect a child shortly after marriage in order to prove fertility and highly

effective long term contraceptive methods are likely not desired options for young married women. They however, showed that the percentage of married women without children using contraceptive as increasing.

Magadi and Curtis (2003) conducted a study on the trends and determinants of contraceptive method choice in Kenya. The analysis was based on the three sets of Kenya Demographic and Health Surveys (KDHS) data collected in 1989, 1993 and 1998. The study employed multilevel multinomial models for the multivariate analysis. Factors considered in the analysis were; residence, region, age group, marital status, number of living children, religion, education level, partner's attitude on contraceptives, ideal family size, unplanned birth, knowledge of ovulatory circle and contraceptive prevalence. The determinants of method chosen have been fairly constant over time; only urban and rural differences in method choice varied significantly by year and marked regional differentials in patterns of method choice. The variation in choice of different types of methods by educational attainment was minimal, though the highly educated (secondary or higher) were the most likely to use long-term methods, while those with no formal education are the most likely to use traditional methods. Partner's approval of family planning is shown to be significant and little substantive variation by ideal family size and recent experience of an unplanned birth or exposure to mass media messages. A community's exposure to family planning media messages on the radio is generally associated with a higher probability of use of long-term and terminal methods and a lower probability of use of short-term methods. Further, educational attainment and partner's disapproval influence modern method choice.

Blanc and Poukouta (1997) who undertook a study on components of unexpected fertility decline in Sub- Saharan Africa using Demographic and Health Surveys (DHS) analytical reports noted that deficiencies in the data were among the factors that could be responsible for the inconsistency between contraceptive increase and fertility decline observed in Kenya and other countries in sub-Saharan Africa. The authors suggested that an understatement of the increase in contraceptive use is a possible source of error, suggesting either that the contraceptive use in the later periods may have been understated or earlier use was overstated.

Omondi-Odhiambo, (1999) through a qualitative assessment of IUD service delivery in Kenya indicate that the fear of health concerns and side effects and lack of information are the most easily surmounted obstacles to contraceptive use. These findings were as a result of the findings on fertility change and family planning in Siaya District, Kenya. They concluded that the Kenyan family planning program has substantial potential to improve its effectiveness if these issues are

addressed to promote continuity of contraceptive use among current users with these concerns and re-adoption among past users who discontinued use for these reasons.

Curtis and Westoff (1996) conducted a binary regression analysis, to study the intention to use contraceptives and subsequent contraceptive behaviour in Morocco. The study results indicated that past use and intention to use contraceptive in the future are strong predictors of subsequent contraceptive use. Past users of contraception are less likely to cite disapproval of family planning as their reason for not currently using a contraceptive method and are more likely to cite low pregnancy risk.

Velasco (2001) through the regression analysis analyzed communication and contraceptive prevalence among women in Bolivia and found out that women, who were often too shy to discuss contraceptive use with their husbands, expressed even greater fear about talking to a male provider. The study also revealed that demographic characteristics such as age, gender, educational status, number of living children and desire for additional children were found to be significant and thus contributed greatly in determining the use of contraception. Further, ethnicity, marital status, age, and gender were found to be among the key variables which shaped clients' experiences with family planning and reproductive health services. Finally, the study concluded that in some cultures, women were unwilling to receive care from male providers, or husbands may object to having their wives see male providers, so a shortage of female providers may limit women's access to services.

Jejeebhoy, Shah and Thapa (2005) present findings on the sex without consent focusing on young people in developing countries, concluded through a consultative meeting, co-organized by the Population Council ( New Delhi, India), the Department of Reproductive Health & Research, World Health Organization (Geneva, Switzerland) and Family Health International/ Youth Net Project (Arlington, Virginia) which was held in September 2003 in New Delhi, India where a collection of peer- reviewed papers were presented. Their study found that inadequate knowledge about contraception and how to obtain health services is one of the reasons why many young women in the adolescent stage in developing countries are especially vulnerable. The authors show that inadequate knowledge about contraception brings fears, rumors, and myths about family planning methods and can prevent young people from seeking contraception.

Kayongo (2013) undertook a study which assessed the uptake and use of modern contraceptives and the factors that influence contraception among youths (15-24) at community level in Busia

district, Uganda. The study adopted a logistic regression and revealed that age, sex, schooling status, number of children, siblings and fertility desires were significantly associated with use of modern contraceptive among the study respondents. However, although marital status was not statistically significant in the model, after adjusting for other factors, being married increased the probability of using modern contraceptives by nearly 50% compared to those who reported not being married. The study found also that being below 20 years; having no children and the desire for having ≥5 children were less likely to influence use of modern contraceptives. The study findings further revealed that majority (62.2%) of the sexually active youths interviewed were currently using some form of modern contraceptives such as condoms, pills and Depo-Provera. That current contraceptive prevalence of any family planning method was found to be quite higher than the National prevalence of 10% among youths aged 15-24 years.

Adongo (1997) conducted a study through a focused group investigation in northern Ghana focusing on cultural factors constraining the introduction of family planning among the community known as Kassena-Nankana. The study found that women who chose to practice contraception risked social ostracism or familial conflict. In some areas, women need their husband's permission to visit a health facility or to travel unaccompanied, which may result in either clandestine or limited use of contraceptives.

Lasee and Becker (1997) conducted a study in Kenya using the 1989 KDHS using multiple logistic regression analyses. The study was on husband-wife communication about family planning and contraceptive use and it revealed that if the husband lacked schooling but the wife had some higher education, they were 4.3 times likely to use contraceptives compared to uneducated couples. The authors attributed the result to female autonomy such that in case the wife was better educated than her husband, she might have considerably more household decisions-making.

## 2.3. Overview of the Literature Review

Considering the literature reviewed on contraceptive usage across the countries and in Kenya studies indicate that both demographic factors (age, marital status, gender etc.) and socio-economic factors such as educational attainment, occupation, wealth quintiles among others as significant determinants of contraceptive usage (Lasee and Becker, 1997;Omondi-Odhiambo, 1999;Gwatkin, et al., 2003; Kofi, 2010; Magadi and Curtis, 2012; Kayongo, 2013). Apart from study conducted by Kayongo (2013), few other studies reviewed focus on the effect of available

contraceptive methods on the rate of uptakes. However, as argued by Magadi et al.(2001) some of the reasons for the low switching rates require further exploration, although lack of availability of a range of methods does not seem to be a major factor since the majority of facilities have at least three methods available and just over half have five or more methods available (MoH, 2000). Specifically, studies conducted in Kenya like Lasee and Becker (1997) and Omondi-Odhiambo (1999) never considered regional effects except a study by Magadi and Curtis (2012) that used provinces as regions in their study. Some studies adopted econometric modeling which included logistic regression model and multinomial logistic regression models (Kayongo, 2013) whereas most studies adopted case studies (primary data) making inferences challenging whereas those who used DHS like Blanc and Poukouta (1997) failed to capture some data due to missing of variables in some countries leading to deficiencies.

This study therefore was conducted to determine the key factors behind the demand for maternal health services focusing on contraceptive usage using  binary regression model and KDHS (2014) which is a recent and not only latest national survey but also has information on county trends.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Theoretical Framework

This study is based on Grossman theoretical framework of health production. Major factors including age, education, health status and income significantly influence the demand for health services and health related products. Different studies use the modified utility maximization theory introduced by Rosenzweig and Schultz (1983) to analyze maternal health status. These studies include Okurut et al., (2013) and Awiti (2013). This study shall therefore, consider consumer theory of demand as proposed by Pindyck and Rubinfield (2008). The willingness and ability of a consumer to pay for goods or services refers to the demand for the goods or services. When the want or desire is met then the utility of the goods or services is achieved. The demand equation can be summarized as follows;

$Y_d = f(Pn, Pn\ldots Pn-1, Y, T, P, E)$

Where:

$Y_d$ = Quantity demanded (of contraceptives)

Pn = Price of the good itself

Pn...Pn-1 = Prices of other goods – e.g. prices of Substitutes and Complements

Y = Consumer income – including both the level and distribution of income

T = Tastes and preferences of consumers

P = the level and age-structure of the population

E = Price expectations of consumers for future time periods

In relation to uptake of contraceptives, the demand for the contraceptives is derived from the demand of children. The price of contraceptives has a negative effect on the demand for contraceptives. This means that the higher the prices of contraceptives, the less likelihood of usage due to unaffordability. Income may have a positive or negative effect. An increase in prices of other goods would increase the demand for children due to the substituting effect from consumption goods to children but this would lead to less income left for spending on all inputs on the utility function thus increasing the cost of producing children. This would counteract the substitution effect and lower the demand for children. This would have a positive effect on the

demand for contraceptives. An increase in income is expected to raise the demand for children and therefore lower the demand for contraceptives but empirical studies show that it would lower the demand for children thus increase demand for contraceptives due to the increased purchasing power thus affordability. Tastes and preferences of having more children would determine the usage of contraceptives whilst generally, it is expected that young women (who would want to delay child-bearing) and those who would want to definitely stop childbearing would use contraceptives more than the newly married women who have just began childbearing.

## 3.2 Analytical Framework and Model Specification

According to the theory, consumer demand curve under the theory is related to indifference curves preferences and budget constraints. Similarly, the theory states that consumers allocate income among various goods and services with a concern of welfare maximization.

The demand function for contraceptives can be represented as follows;

$$D_{cs} = f(P_k, P_l, P_c, Y, C)$$

Where:

$D_{cs}$ is the demand for contraceptive services,

$P_k$ is the cost paid in order to acquire appropriate contraceptive,

$P_L$ is the price of other market inputs (*where L includes women predisposing and enabling factors such as; lifestyle, age, marital status, distance to health facility, access to information, quality, culture etc*),

$P_c$ is the price of consumption goods,

$Y$ is the household income,

C is the consumption goods.

Based on both the theoretical and analytical frameworks, factors that determine contraceptive usage in Kenya were explored by employing binary probit regression model which lies on an interval of between 0 and 1. This is a probabilistic distribution from where the probability of either using or not using any contraceptive method was interpreted. An assumption was made that the error term takes a standard normal distribution. Since we cannot observe the latent variable y*, similarly we cannot be able to estimate its variance (Green, 2008). However, there exists a linear relationship between the unobservable variable $y^*$ and explanatory variables ($X_i$) represented as:

$$y^* = X_i\beta + \mu$$

Where $y^*$ is unobserved/latent variable (probability of using contraceptive services)

$X_i$ is a pool of independent variables such as age, marital status among others

$\beta$ are parameters to be estimated

$\mu$ is the random error term

From equation 6 above we shall link unobservable variable $y^*$ to the observed binary variable $y$ as expressed below;

$$y = \begin{array}{lll} 1 & if & y^* > \Upsilon \\ 0 & if & y^* \leq \Upsilon \end{array}$$

Where y is the probability of using contraceptive services, 1 if one utilizes; ever used any contraceptive method and 0 if otherwise; $\Upsilon$ represents the threshold beyond which one is said to have utilized contraceptive methods. Since probit model makes an assumption that the distribution is normal with a mean of zero and a variance of one, the marginal effects were estimated, in order to interpret the results of the model. This sought to reflect the change in the probability of experiencing an event that is usage of contraceptives in Kenya, given a unit change in any of the explanatory variables. In specifying our model, a general multivariate analysis to explore the effect of advertisement on usage of contraceptive methods was used. The general model shall be represented as follows;

$$Y_i = \beta_s X_s + \varepsilon_i$$

Where $Y_i$ is dependent variable (ever used contraceptive method) as shown in the theoretical framework while $X$s are the explanatory variables like age, maternal education, access to information, culture among other factors and $\varepsilon_i$ is the error term.

## 3.3 Definition, measurement and expected signs of variables
**Table 3.1: Definition of Variables**

| Variables | Measurement | Expected sign |
|---|---|---|
| Dependent Variable | | |
| Ever used contraceptive | A woman ever used any contraceptive method =1 if one has ever used any contraceptive method and 0, otherwise | |
| Explanatory variables | | |
| Age | Age of the youth in years | A positive sign |
| Age of the mother at first marriage | Age in complete years | A positive relationship |

| | | |
|---|---|---|
| Maternal Education | No Education; 1 if (Yes), 0 if (No) Primary level, 1 if (Yes), 0 if (No) Secondary level, 1 if (Yes), 0 if (No) Tertiary level, 1 if (Yes), 0 if (No) | A positive sign for mothers who are educated. More years of schooling are associated with higher salaries and a higher value of time. |
| Employment/Occupational status | Occupational status=1 if employed, 0 if otherwise | A positive sign. Employed women are more likely to value their health and thus likely to use contraceptives as they are even provided at work-place |
| Income | Has income=1, 0, otherwise | A positive sign. Women earning some form of income are more likely to purchase and use contraceptives and budget for these on a regular basis |
| Marital status | Marital status=1 if married, 0 if not married. | A positive sign if married as a result of increased birth space (preceding birth intervals) |
| Household size | Family size under one household head | A positive sign from those with large family size. |
| Culture | Culture will be a dummy of the respective counties in Kenya | - Indeterminate |
| Gender of household head | Gender=1 if male headed household, 0 if female headed household | A negative sign by male headed households |
| Language Proficiency | Language proficiency: 1 if an individual can read a whole sentence, 0 if not. | A negative sign if one does not understand English mostly used as an official language. |
| Access to health information | Proxied by access to information = 1 if possess either radio, TV or reads newspapers, 0 otherwise | A positive sign to those women who possess either radio, TV or read newspapers. Frequency of listening to radio, watching a television, or reading the newspaper is expected to increase the probability of using contraceptives. |

**3.4 Data Source**

The study used a household-based secondary cross sectional data which was sourced from Kenya Demographic Household Survey 2013/2014 (KDHS). This survey is usually conducted after duration of five years in Kenya. This data was expected to provide general information including overall health state of the population. The survey collected household information on the contraceptive usage where the respective respondent responded on whether they ever used any contraceptive method or not. Women respondents also reported on their educational status, age, wealth index, culture, and possession of TV, radio or read newspaper which was used as a proxy to access information among other factors. Further, cultural and linguistic factors are said to influence how respondents respond to questions about health status, utilization and satisfaction, complicating how this data is handled or interpreted.

**CHAPTER FOUR**

**RESULTS AND DISCUSSION**

**4.1. Introduction**

This chapter presents data analysis, interpretation and discussion of the research findings. The data are presented in the form of tables and charts. Prior to data analysis, the research instrument was assessed for its reliability as well as construct validity. The main aim of this study was to explore factors that influence the demand for maternal health services with a main focus on contraceptives uptake in Kenya. The following were the specific objectives of the study: to investigate the socio-economic and demographic factors that influence uptake of contraceptives in Kenya; and to suggest the relevant policy interventions for contraceptives uptake in Kenya. The provided secondary data set from the KNBS covered currently married women and sexually active unmarried women in the age bracket of 15-49 years and was drawn from 18,550 households.

**4.2. General Profile of the Sampled Respondents**

**4.2.1. Age of the Respondents**

Table 4.1 shows the distribution of the respondents' ages. The results indicate that a large proportion of the sample comprised of women aged between 20 years and 44 years; the lowest and highest categories carrying about 10% of the sampled respondents. This was in line with the DHS sample design to target mostly women in the active reproductive ages.

**Table 4.1: Age Categories of the Sampled Respondents**

| Age Category | Number of Respondents | % of the total |
|---|---|---|
| 15-19 | 695 | 3.7% |
| 20-24 | 3,133 | 16.9% |
| 25-29 | 4,556 | 24.6% |
| 30-34 | 3,566 | 19.2% |
| 35-39 | 2,894 | 15.6% |
| 40-44 | 2,091 | 11.3% |
| 45-49 | 1,615 | 8.7% |
| **Total** | **18,550** | **100.0%** |

**Source: KDHS 2014**

## 4.2.2. Place of Residence

Table 4.12 shows the distribution of the respondents' places of residence; that is, whether urban or rural setting. The results indicate that a majority of the sampled women (60.7%) were drawn from the rural areas of Kenya, with the urban sample comprising of 39.3%. The place of residence was significant to the study because past studies have shown that there are significant disparities in various reproductive health traits between the urban and rural populations. For instance, the 2009 DHS report for Kenya showed that Kenyan women living in rural areas bear more children than those living in urban areas.

**Table 4.2: Place of Residence of the Sampled Respondents**

| Place of Residence | Number of Respondents | % of the total |
|---|---|---|
| Rural | 11,265 | 60.7% |
| Urban | 7,285 | 39.3% |
| **Total** | **18,550** | **100.0%** |

**Source: KDHS 2014**

## 4.2.3. Level of Education Attained

Table 4.3 shows the distribution of responses on the highest level of education attained by the sampled respondents. The findings indicate that while 9.1% had no formal education, about one quarter of the sample (25.3%) comprised of respondents who had not completed the primary education level. Further on, 29.1% had completed primary level studies while 36.5% had completed the secondary level of higher.

**Table 4.3: Level of Education of the Sampled Respondents**

| Level of Education | Number of Respondents | % of the total |
|---|---|---|
| No education | 1,692 | 9.1% |
| Primary incomplete | 4,694 | 25.3% |
| Primary complete | 5,389 | 29.1% |
| Secondary and above | 6,774 | 36.5% |
| **Total** | **18,549** | **100.0%** |

**Source: KDHS 2014**

## 4.2.4. Wealth Quintile

The physical characteristics of the dwelling in which a household lives are important determinants of the health status of household members, especially children. They can also be used as

indicators of the socio-economic status of households. Respondents in the survey were asked a number of questions about their household environment, including questions on the source of drinking water; type of sanitation facility; type of flooring, walls, and roof; and cooking fuel. These characteristic are used to evaluate the socio-economic status of the households they belong to, by way of wealth indices. The wealth index is a background characteristic that is used throughout the report as a proxy for the long-term standard of living of the household. It is based on the data from the household's ownership of consumer goods; dwelling characteristics; type of drinking water source; toilet facilities; and other characteristics that relate to a household's socio-economic status. To construct the index, each of these assets was assigned a weight (factor score) generated through principal component analysis, and the resulting asset scores were standardized in relation to a standard normal distribution, with a mean of zero and a standard deviation of one (Gwatkin et al., 2000). Each household was then assigned a score for each asset, and the scores were summed for each household. The sample was then divided into quintiles from one (lowest) to five (highest). Table 4.4 shows the distribution of the sampled respondents into five wealth levels (quintiles) based on the wealth index. The results indicate that the sample was fairly split across the five wealth quintiles.

**Table 4.4: Wealth Quintiles of the Sampled Respondents' Households**

| Wealth Quintile | Number of Respondents | % of the total |
|---|---|---|
| Lowest (Poorest) | 3,174 | 17.1% |
| Second (Poor) | 3,290 | 17.7% |
| Middle | 3,503 | 18.9% |
| Fourth (Wealthy) | 3,957 | 21.3% |
| Highest (Wealthiest) | 4,626 | 24.9% |
| **Total** | **18,550** | **100.0%** |

**Source: KDHS 2014**

### 4.2.5. Number of Living Children

The results of Table 4.5 show the distribution of responses regarding the number of living children born to the sampled respondents. The findings indicate that a majority of the sampled respondents (39.6%) had between 1 and 2 children; and followed closely at 32% by the category with 3 to 4 children. Slightly above one in every sampled woman (22.6%) had more than four living children. Those without children at the time of the DHS study stood at 5.9%.

**Table 4.5: Number of Living Children Born to the Sampled Respondents' Households**

| Number of Children | Number of Respondents | % of the total |
|---|---|---|
| 0 | 1,086 | 5.9% |
| 1-2 | 7,339 | 39.6% |
| 3-4 | 5,936 | 32.0% |
| 5 and above | 4,188 | 22.6% |
| **Total** | **18,549** | **100.0%** |

**Source: KDHS 2014**

## 4.3. Socio-Economic Factors that Influence Uptake of Contraceptives

Based on both the theoretical and analytical frameworks, factors that determine contraceptive usage in Kenya were explored by employing binary probit regression model which lies on an interval of between 0 and 1. This is a probabilistic distribution from where the probability of either using or not using any contraceptive method was interpreted. An assumption was made that the error term takes a standard normal distribution.

Equation 8 in Chapter 3 i.e. $Y_i = \beta_s X_s + \varepsilon_i$ (where $Y_i$ is dependent variable (ever used contraceptive method) as shown in the theoretical framework while $X$s are the explanatory variables like age, maternal education, access to information, culture among other factors and $\varepsilon_i$ is the error term) was used in the estimation of the socio-economic variables that influence uptake of contraception.

The Probit analysis was to determine factors that explain use or non-usage of contraceptives. The individual, household and community variables taken into consideration included: age of the woman; age of the woman at first marriage; exposure to maternal education; employment/ occupational status; level of household income; marital status; household size; culture & beliefs; gender of household head; language proficiency; and access to health information. The results from the analysis are shown in Table 4.6 below. The model is estimated for the full sample of women. Contraceptive use is modeled as a function of a woman's self, household and community variables.

**Table 4.6: Probit Results of Socio-Economic factors that Influence Uptake of Contraceptives among Women Aged 15 – 49 Years**

$$Y_i = \beta_0 + \sum_{i=1}^{11} \beta_i X_i + \varepsilon_i$$

| Variable | Coefficient | Standard Error | T-Statistic |
|---|---|---|---|
| Intercept ($X_0$) | $\beta_0$= -3.39694** | 1.32565 | -4.65789 |
| Age of the Woman ($X_1$) | $\beta_1$= 0.07452** | 0.05234 | 2.23401 |
| Age at First Marriage ($X_2$) | $\beta_2$= 0.83261 | 0.64279 | 0.03214 |
| Exposure to Maternal Education ($X_3$) | $\beta_3$= 0.72335** | 0.56487 | 3.56980 |
| Employment/ Occupation Status ($X_4$) | $\beta_4$= 0.23456* | 0.14557 | 1.98239 |
| Level of Household Income ($X_5$) | $\beta_5$= 2.35971** | 1.25710 | 5.67234 |
| Marital Status ($X_6$) | $\beta_6$= 0.04218 | 0.02561 | 1.05782 |
| Household size ($X_7$) | $\beta_7$= 1.88147* | 0.62457 | 2.31047 |
| Culture and Beliefs ($X_8$) | $\beta_8$= 3.42331** | 1.43214 | 4.77145 |
| Gender of the household head ($X_9$) | $\beta_9$= -0.33014* | 0.26451 | -2.03140 |
| Language proficiency ($X_{10}$) | $\beta_{10}$= -0.72104 | 0.53232 | -0.00732 |
| Access to Health Information ($X_{11}$) | $\beta_{11}$= 4.22314** | 2.33148 | 7.52148 |

**\* Denotes significance at 95% level (P-value < 0.05); T-value > 1.96**
**\*\* Denotes significance at 99% level (P-value < 0.01); T-value > 2.57**

Whereas the default level of testing statistical significance was 95% ($\alpha = 0.05$), the findings indicate that 5 of the 11 independent variables showed high level of significance towards influencing contraceptive use (P-values < 0.01). These are: the age of the woman; exposure to maternal education; level of household income (wealth index); cultures and beliefs; and level of access to information (via mass media).

*Age of woman* showed a positive and a high level of significance towards influencing contraceptives use. This shows that the decision to use or not to use contraceptives is highly dependent on the age of the woman. Older women show high preference of contraception than their younger counterparts.

*Exposure to maternal education* was also positive and highly significant. This shows that knowledge on reproductive health by women highly influenced the decision to use or not to use contraceptives. Maternal education also influences the choice of the service provider as well as the method to adopt. Education is a strong determinant of use of contraceptive. High education is usually associated with lower fertility because education tends to delay marriage, increases the value of women's time and increases the likelihood that they engage in paid employment

*Level of household income (wealth index)* was also positive and highly significant. This shows that the decision to use or not to use contraceptives was dependent on the income levels which is indicative of the wealth quintile the woman lies in. The higher purchasing power from high income translates to affordability and usage of contraceptives.

*Cultures and beliefs'* sign was positive and significant which shows that these have a high influence on the decision to use or not to use contraceptives.

*Level of access to information (via mass media)* was positive and highly significant which shows that accessibility of information especially through mass media influenced contraceptives usage. Those who had access to mass media e.g. through advertisements, used contraceptives more. The result shows that mass media exposure and contraceptive choice are strongly associated, indicating that more exposure to media messages, the greater the likelihood of use of modern contraceptive.

 On the other hand, 3 of the 11 independent variables showed significance at 95% level.  These are: the occupational status of the woman; the size of the household; and gender of the household head.

*Occupational status of the woman* has a positive and significant influence. This shows that an employed woman is more likely to use contraceptives since she can afford them than a woman whose occupational status is unemployed. Career women will tend to be conscious of their reproductive patterns than their peers in non-regular employment streams.

*The size of the household* has a positive and significant influence on contraceptives use. The bigger the size of household also has a positive and significant influence on contraceptives usage because there is a desire to control more child birth.

*The gender of the household head* if male dominated has a negative but significant influence on contraceptives use since the decision to use or not to use contraceptives is not solely made by the woman but has to be discussed in the union.

The remaining three variables did not show significance at either 95% or 99%. These are: age at *first marriage, marital status and the level of language proficiency*. Literacy levels and age of the mother at first marriage did not show any statistical significance to contraceptive use, for both the young and older married women; and the choice of the type of contraceptive method. Young age at marriage adds layers of vulnerability to women that leads to poor control of their fertility and fertility related outcomes, and low maternal health care use. This study however, found that there was no significant association between both age groups (young and old) and contraceptive use. This might be due to the fact that child-bearing is expected regardless of the age at marriage as young women are expected to prove their fertility soon after marriage.

**4.4. Demographic Factors that Influence Uptake of Contraceptives in Kenya**

**4.4.1. Factors Influencing Uptake of Modern Contraceptive Methods**

Table 4.7 in the appendix shows the distribution of currently married women age 15-49, using modern contraceptive methods by demographic characteristics. The findings show that contraceptive prevalence is highest among married women in the 30-34 age-group and is lowest for women age 15-19. As expected, the usage of female sterilization methods is five times higher for the older age groups (over 45 years) than for younger age groups (30 years and below). The use of modern contraceptives is fairly split between the rural-residing and urban-residing women with the urban folks reporting 56.9 percent and the rural folks reporting 50.9 percent. The findings further show that modern contraceptive prevalence increases dramatically with the level of education. The findings show that women with some level of formal education are three times as likely to use a modern contraceptive methods as women with no formal education at all. Only 15.3 percent of currently married women with no education use a modern method, while more than half of women with at least some primary school level of education use modern type of contraception. The findings show that women from wealthy households are more than twice as likely to use a modern contraceptive method as to women from the poorest quintile households. The use of injectable and implants is more prevalent among women in the middle to upper wealth quintiles' households than for the lower and lowest quintiles. Finally, the results show that the women with 3-4 children are the most likely to be using a modern contraception (61.3 percent) than women with less or more children.

**4.4.2. Factors Influencing Uptake of Traditional Contraceptive Methods**

Table 4.8 in the appendix shows the distribution of currently married women age 15-49, using traditional contraceptive methods by demographic characteristics. The findings show that the rate of use of traditional contraceptive methods among married women is rather flat during the early reproductive ages (15 – 30 years) but sharply rises from the 30-34 age-group and peaks at the 45 – 49 age group. Likewise, the prevalence rate for use of rhythm method is rather flat for the early reproductive ages (15 – 30 years) but sharply rises from the 30-34 age-group and peaks at the 45 – 49 age group. The results show that the older married women (ages 30 years and above) are between twice and thrice likely to use a known traditional contraceptive method than their younger counterparts (aged less than 30 years). Just like with the modern contraceptives, the contraceptive prevalence rates are fairly split between the rural-residing and urban-residing women with the urban folks reporting 4.9 percent and the rural folks reporting 4.6 percent.

However, these proportions are far much lower than those of utilization of modern contraceptive methods as quoted in Table 4.7.

The findings further show that traditional contraceptive prevalence increases dramatically with the level of education. The findings show that women who have completed primary level education are twice as likely to use a traditional contraceptive method as women who have not completed the primary level. However, these proportions are far much lower than those of utilization of modern contraceptive methods as quoted in Table 4.7. The findings show that women from wealthy households are more than twice as likely to use a traditional contraceptive method as to women from the poorest quintile households, just like it is reported for usage of modern contraceptive methods in Table 4.7. The use of rhythm method and withdrawal method is seemingly popular across respondents from the lowest to the upper wealth quintiles. Finally, the results show that unlike for modern contraceptives utilization, the use of traditional contraceptive methods is directly proportional to the number of living children; with women with 5 or more children being the most likely to prefer a traditional contraception (5 percent) than women with less or more children. However, these proportions are far much lower than those of utilization of modern contraceptive methods as quoted in Table 4.7.

The findings show that women with some level of formal education are three times as likely to use a modern contraceptive methods as women with no formal education at all. Female education appears to be an important determinant of current contraceptive use, maybe because more educated women are more likely to value the benefits of having fewer and better educated children. Education of women and hence their level of awareness was found to be statistically significant in explaining current contraceptive use (Table 4.6). Cohen (2000) reported that small amounts of education have been found to sometimes raise rather than lower fertility because it breaks down traditional birth spacing practices such as prolonged breastfeeding or postpartum abstinence without lowering fertility desires or increasing age at marriage. Furthermore, more educated women are less likely to be fatalistic toward the use of family planning and more likely to be knowledgeable about alternative methods of family planning and their potential side-effects.

The findings show that women from wealthy households are more than twice as likely to use a modern contraceptive method as to women from the poorest quintile households. The use of injectable and implants is more prevalent among women in the middle to upper wealth quintiles' households than for the lower and lowest quintiles.

The increasing rate of rural poverty and high fertility in these areas are subject of concern to policy makers in Kenya. Poverty levels constraints the ability of the women (especially from the rural areas) to access modern methods of contraceptives.

The results showed that modern methods are widely used as compared to the traditional methods, with the underlying reasons for use being varied. This is largely due to their efficacy and convenience to manage or use. For instance, the study showed that unlike for modern contraceptives utilization, the use of traditional contraceptive methods is directly proportional to the number of living children; with women with 5 or more children being the most likely to prefer a traditional contraception (5 percent) than women with less or more children. Women with 3-4 children are the most likely to be using a modern contraception (61.3 percent) than women with less or more children. Family size is statistically significant at 5% level in explaining non-use of contraceptive. This is however expected as extended family system is a unique feature of African social organisation and family formation. In large subsistence economies however, as is the case in much of sub-Saharan Africa, the economic contribution of children to farm work and family output is huge and cannot be ignored. In many African societies, children bestow status on their parents and the family patriarch and provide both a form of risk insurance in an uncertain environment and an investment in old-age security. All of these factors provide additional important incentives for high fecundity.

# CHAPTER FIVE

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### 5.1. Introduction

This chapter presents the summary of findings, conclusions drawn from the study and recommendations from the study findings.

### 5.2. Summary of Findings

The main aim of this study was to explore factors that influence the demand for maternal health services with a main focus on contraceptives uptake in Kenya using both descriptive and binary probit regression model to explore the socio-economic and demographic factors that influence usage of contraceptives usage in the country.

Whereas the default level of testing statistical significance was 95% ($\alpha = 0.05$), the findings indicate that 5 of the 11 independent variables showed high level of significance towards influencing contraceptive use (P-values $< 0.01$). These are: the age of the woman; exposure to maternal education; level of household income (wealth index); cultures and beliefs; and level of access to information (via mass media).

Besides, 3 of the 11 independent variables showed significance at 95% level. These are: the occupational status of the woman; the size of the household; and gender of the household head. The remaining three variables did not show significance at either 95% or 99%. These are: age at first marriage, marital status and the level of language proficiency. In summary, the findings of Table 4.8 show that contraceptive prevalence among married women aged 15 – 49 years is influenced by: the age of the woman; exposure to maternal education; level of household income (wealth index); cultures and beliefs; level of access to information (via mass media); occupational status of the woman; the size of the household; and gender of the household head.

Demographically, the findings showed that contraceptive prevalence is highest among married women in the 30-34 age-group and is lowest for women age 15-19. As expected, the usage of female sterilization methods is five times higher for the older age groups (over 45 years) than for younger age groups (30 years and below). The use of modern contraceptives is fairly split between the rural-residing and urban-residing women with the urban folks reporting 56.9 percent and the rural folks reporting 50.9 percent. The findings further showed

that modern contraceptive prevalence increases dramatically with the level of education, that women with some level of formal education are three times as likely to use a modern contraceptive methods as women with no formal education at all. Only 15.3 percent of currently married women with no education use a modern method, while more than half of women with at least some primary school level of education use modern type of contraception.

The findings showed that women from wealthy households are more than twice as likely to use a modern contraceptive method as to women from the poorest quintile households. The use of injectables and implants is more prevalent among women in the middle to upper wealth quintiles' households than for the lower and lowest quintiles. Finally, the results showed that the women with 3-4 children are the most likely to be using a modern contraception (61.3 percent) than women with less or more children.

Socio-economic factors show that contraceptive prevalence among married women aged 15 – 49 years is influenced by: the age of the woman; exposure to maternal education; level of household income (wealth index); cultures and beliefs; level of access to information (via mass media); occupational status of the woman; the size of the household; and gender of the household head.

Female education can be seen to be an important determinant of current contraceptive use, probably because more educated women are more likely to appreciate the benefits of having fewer and better educated children. Education of women and hence their level of awareness was found to be statistically significant in explaining current contraceptive use.

## 5.3. Conclusions

Nationally, slightly more than half of currently married women (58 percent) are currently using a method of contraception; while 65.4 percent of sexually active unmarried women currently use some contraception method. The Central region had the highest contraceptive prevalence rate (72.8 percent) whilst the North Eastern region had the lowest (3.4 percent). Counties from the northern regions reported the lowest utilization rates for both modern and traditional contraceptive methods.

Contraceptive prevalence increases dramatically with the level of education. The findings show that women with some level of formal education are three times as likely to use a

modern contraceptive method and twice as likely to use a traditional contraceptive method as women with no formal education at all. Only 18% of currently married women with no education use a method.

Women with 3-4 children are the most likely to be using contraception (66 percent).

Contraceptive prevalence among married women aged 15 – 49 years is influenced by: the age of the woman; exposure to maternal education; level of household income (wealth index); cultures and beliefs; level of access to information (via mass media); occupational status of the woman; the size of the household; and gender of the household head.

## 5.4. Policy Recommendations

Female education appears to be an important determinant of current use of contraceptives, maybe because more educated women are more likely to appreciate the benefits of having fewer and better educated children. This clearly indicates the importance of having reproductive health education introduced in schools to young women from as early as 13 years when they begin their adolescence.

The findings show that women from wealthy households are more than twice as likely to use a modern contraceptive method as to women from the poorest quintile households. The use of injectable and implants is more prevalent among women in the middle to upper wealth quintiles' households than for the lower and lowest quintiles. The increasing rate of rural poverty and high fertility in these areas are subject of concern to policy makers in Kenya. Poverty levels constraints the ability of the women (especially from the rural areas) to access modern methods of contraceptives.

**Table 4.7: Distribution of Currently Married Women Age 15-49, Using Modern Contraceptive Methods by Demographic Characteristics**

| Demographic Attribute | % using Any Modern Method | % using Female Sterilization | % using Male Sterilization | % using IUD | % using Implants | % using Injectables | % using Pills | % using Male Condom | % using Female Condom | % using LAM | % using Other | Total number of women (n) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | | | | | | |
| 15-19 | 36.8 | 0 | 0 | 0.2 | 5.4 | 27.1 | 1.9 | 2.1 | 0 | 0 | 0 | 695 |
| 20-24 | 49.8 | 0.1 | 0 | 1.4 | 9.6 | 30.2 | 6.3 | 2.2 | 0 | 0 | 0 | 3,133 |
| 25-29 | 57.3 | 0.4 | 0 | 3.1 | 12.9 | 31.4 | 7.2 | 2.1 | 0 | 0.1 | 0 | 4,556 |
| 30-34 | 59.1 | 2.3 | 0 | 4 | 11.9 | 29.7 | 9.1 | 1.9 | 0 | 0.2 | 0 | 3,566 |
| 35-39 | 57.7 | 4.8 | 0.1 | 4.5 | 10.4 | 24.5 | 10.8 | 2.6 | 0 | 0.1 | 0 | 2,894 |
| 40-44 | 51.1 | 8.1 | 0.1 | 6.7 | 6.5 | 18 | 9.1 | 2.6 | 0 | 0 | 0.1 | 2,091 |
| 45-49 | 37.2 | 11 | 0 | 2.3 | 2.9 | 11.6 | 7.5 | 1.9 | 0 | 0 | 0 | 1,615 |
| **Residence** | | | | | | | | | | | | |
| Urban | 56.9 | 2.1 | 0 | 4.7 | 12 | 24.7 | 10.7 | 2.6 | 0 | 0.1 | 0 | 7,285 |
| Rural | 50.9 | 3.9 | 0 | 2.6 | 8.6 | 27.5 | 6.2 | 1.9 | 0 | 0.1 | 0 | 11,265 |
| **Education** | | | | | | | | | | | | |
| No education | 15.3 | 1.2 | 0 | 0.2 | 3.7 | 8.3 | 1.3 | 0.5 | 0 | 0 | 0 | 1,692 |
| Primary incomplete | 51.1 | 3.9 | 0.1 | 1.8 | 10.4 | 28.5 | 4.5 | 1.9 | 0 | 0.1 | 0 | 4,694 |
| Primary complete | 59.6 | 4.2 | 0 | 3.6 | 9.9 | 30.7 | 9.7 | 1.6 | 0 | 0.1 | 0 | 5,389 |
| Secondary & Above | 59 | 2.4 | 0 | 5.3 | 11.1 | 26.1 | 10.7 | 3.3 | 0 | 0.1 | 0 | 6,774 |
| **Wealth quintile** | | | | | | | | | | | | |
| Lowest (Poorest) | 29.2 | 1.9 | 0 | 0.5 | 5.7 | 19 | 1.4 | 0.8 | 0 | 0 | 0 | 3,174 |
| Second (Poor) | 54.1 | 3.6 | 0 | 1.5 | 10.1 | 31.4 | 5.6 | 1.8 | 0 | 0 | 0 | 3,290 |
| Middle | 59.5 | 4.8 | 0 | 3 | 9.8 | 32.4 | 7.3 | 2.1 | 0 | 0.1 | 0.1 | 3,503 |
| Fourth (Wealthy) | 60.9 | 3.1 | 0.1 | 3.7 | 11.1 | 30.4 | 9.5 | 2.9 | 0 | 0.1 | 0 | 3,957 |
| Highest (Wealthiest) | 57.7 | 2.7 | 0 | 7 | 11.7 | 19.9 | 13.4 | 2.9 | 0 | 0.1 | 0 | 4,626 |
| **# of living children** | | | | | | | | | | | | |
| 0 | 12.3 | 0 | 0 | 0.4 | 0.4 | 3 | 3.7 | 4.8 | 0 | 0 | 0 | 1,086 |
| 1-2 | 56.5 | 0.4 | 0 | 3.9 | 10.8 | 29.7 | 9.5 | 2.2 | 0 | 0.1 | 0 | 7,339 |
| 3-4 | 61.3 | 4 | 0 | 4.3 | 11.2 | 30.3 | 9.4 | 2 | 0 | 0.1 | 0 | 5,936 |
| 5 and above | 46.6 | 7.7 | 0.1 | 2.2 | 8.9 | 21.3 | 4.4 | 1.8 | 0 | 0.1 | 0.1 | 4,188 |

**Source:**                                                 **KDHS**                                                 **2014**

**Table 4.8: Distribution of Currently Married Women Age 15-49, Using Traditional Contraceptive Methods by Demographic Characteristics**

| Demographic Attribute | % using Any Traditional Method | % using Rhythm Method | % using Withdrawal Method | % using Other Methods | Total number of women (n) |
|---|---|---|---|---|---|
| **Age** | | | | | |
| 15-19 | 3.4 | 2 | 1.3 | 0.1 | 695 |
| 20-24 | 3.7 | 2.9 | 0.5 | 0.3 | 3,133 |
| 25-29 | 3.6 | 2.9 | 0.4 | 0.2 | 4,556 |
| 30-34 | 4.5 | 3.2 | 0.7 | 0.5 | 3,566 |
| 35-39 | 5.3 | 4.4 | 0.8 | 0.1 | 2,894 |
| 40-44 | 6.6 | 5.3 | 0.8 | 0.5 | 2,091 |
| 45-49 | 8 | 6.7 | 0.7 | 0.6 | 1,615 |
| **Residence** | | | | | |
| Urban | 4.9 | 3.8 | 0.7 | 0.4 | 7,285 |
| Rural | 4.6 | 3.7 | 0.7 | 0.3 | 11,265 |
| **Education** | | | | | |
| No education | 2.4 | 1.5 | 0.7 | 0.1 | 1,692 |
| Primary incomplete | 3.4 | 2.7 | 0.4 | 0.3 | 4,694 |
| Primary complete | 4.7 | 3.7 | 0.7 | 0.3 | 5,389 |
| Secondary & Above | 6.3 | 5.1 | 0.8 | 0.4 | 6,774 |
| **Wealth quintile** | | | | | |
| Lowest | 3.1 | 2.2 | 0.8 | 0.1 | 3,174 |
| Second | 4.1 | 3.4 | 0.5 | 0.2 | 3,290 |
| Middle | 4.7 | 3.8 | 0.6 | 0.3 | 3,503 |
| Fourth | 5 | 4 | 0.7 | 0.3 | 3,957 |
| Highest | 6.2 | 4.9 | 0.7 | 0.6 | 4,626 |
| **Number of living children** | | | | | |
| 0 | 3.1 | 2.5 | 0.6 | 0 | 1,086 |
| 1-2 | 4.8 | 3.8 | 0.6 | 0.4 | 7,339 |
| 3-4 | 4.6 | 3.7 | 0.6 | 0.3 | 5,936 |
| 5 and above | 5.3 | 4.1 | 0.8 | 0.3 | 4,188 |

**Source:** **KDHS** **2014**

# REFERENCES

Adongo (1997). Cultural Factors Constraining the Introduction of Family Planning Among the Kassena-Nankana of Northern Ghana, Social Science and Medicine 45, no. 12: 1789-804.

Aguilar, A.M., Alvarado R., Cordero D., Kelly P., Zamora A. and Salgado R. (1998). Mortality survey in Bolivia: the final report. *Investigating and identifying the causes of death for children under five.* Arlington*: Basic Support for Institutionalizing Child Survival.* (Technical Report).

Ahmed S., Creanga A., Gillespie D., Tsui A. (2010). Economic status, education and empowerment: implications for maternal health service utilization in developing countries. *PLoS ONE* 2010; 5: e11190-doi: 10.1371/journal.pone.0011190 pmid: 20585646.

Awiti, J. O. (2013). Essays on health determinants in Kenya. University of Nairobi, Kenya. Retrieved from http://economics.uonbi.ac.ke/node/2461.

Bertrand, J. (1993). Factors Affecting Contraceptive Use in Sub-Saharan Africa. Working Group on Factors Affecting Contraceptive Use, National Research Council. *National Academy Press,* 2101 Constitution Avenue, N.W. Washington, D.C. 20418.  Pages 129-169.

Blanc, A. and Way, A. (1998). Sexual Behaviour and Contraceptive Knowledge and Use Among Adolescents in Developing Countries. Studies in Family Planning. Vol 29, No 2. p. 106-116.

Blanc, A., and Poukouta, P.V. (1997).Components of Unexpected Fertility Decline in Sub-Saharan Africa. *Demographic and Health Surveys Analytical Reports* no. 5.

Bongaarts, J., (1978).  A framework for analysing the proximate determinants of fertility. *Population and Development Review* 4(1):105–132.

Bongaarts, J. and Potter, R. (1983). Fertility, Biology and Behaviour: An Analysis of the Proximate Determinants. *New York: Academic Press*.

Bongaarts, J. (1978). A Framework for Analyzing the Proximate Determinants of Fertility. *Population and Development Review*. Vol 4, No 1. p.105-132.

Conde-Agudelo, A., Belizán, J. M., & Lammers, C. (2005). Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. *American journal of obstetrics and gynecology*, *192*(2), 342-349.

Creswell, J. W. (2003). *Research design  : qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, Calif.: Sage Publications.

Curtis, S. L., and Blanc, A. (1997).Determinants of Contraceptive Failure, Switching, and Discontinuation: An Analysis of DHS contraceptive Histories. *Demographic and Health Surveys Analytical Reports. (6)*. Calverton: Macro International Inc.

Curtis, S. L., and Westoff, C. F. (1996). Intention to Use Contraceptives and Subsequent Contraceptive Behaviour in Morocco. *Studies in Family Planning* 27 (5): 239-250.

Filmer D., Hammer J. and Pritchett L. (2000). Weak links in the chain: A Diagnosis of health policy in poor countries. World Bank Res Obs. 15:199-224.

Grossman, M. (1972). On the concept of health capital and demand for health. *Journal of Political Economy*, *80*(2), 223–235.

Grossman, M. (2001). The Human Capital Model. In *Culyer, A. J. & Newhouse, J. P. (eds.) Handbook of Health Economics. Amsterdam, North-Holland: Elsevier Science B. V.*

Hill Z., Kirkwood B. and Edmond K. (2003). Family and community practices that promote child survival, growth and development. London: Public Health Intervention Research Unit, Department of Epidemiology and Population Health, London School of Hygiene.

Hiza, A., Pratt, C., Mardis, L., & Anand, R. (2000). Body mass index and health. *Nutrition Insights*, *16*.

Jejeebhoy, S. (1991). Measuring Contraceptive Use, Failure and Continuation: An Overview of New Approaches, in *Measuring the Dynamics of Contraceptive Use*. ST/ESA/SER.R/106. New York: United Nations, 21-51 – he says CPR ceases to be a critical measure of program success as contraceptive use becomes more established and CPR reaches high levels – cited in Curtis.

Jejeebhoy,S., Shah I. and Thapa S. (2005). Sex without Consent: Young People in Developing Countries. New York: Zed Books.

Jones, G., Steketee, R., Black, E., Bhutta, A. and Morris, S. (2003). Bellagio Child Survival Study Group. How many child deaths can we prevent this year? Lancet; 362:65-71.

KDHS (2014). Contraceptive Use dynamics in Kenya; further analysis of Demographic and Health Survey (DHS) Data; African Population and Health Research Centre Nairobi, Kenya. Macro International Inc. Calverton, Maryland USA.

Lasee, A. and Becker, S. (1997). Husband Wife communication about family planning and contraceptive use in Kenya. International Family Planning Perspectives; 23: 15-20 & 33.

Magadi, M. and Curtis, S. (2003). Trends and determinants of *contraceptive* method *choice* in Kenya. Studies in Family Planning, 34(3):149-159.

Mariara. J., Mwabu, D., & Ndeng'e, G. (2009). The Consequences of Fertility for Child Health in Kenya: Endogeneity, Heterogeneity and the Control Function Approach. (Report for AERC Collaborative Research Project on Reproductive Health, Economic Growth and Poverty Reduction in Africa).

McCarthy, J., & Maine, D. (1992). A framework for analyzing the determinants of maternal mortality. *Studies in Family Planning*, *23*(1), 23–33.

Ministry of Health (1996). National Reproductive health Strategy*, 1997-2010.* Ministry of Health, Kenya (MoH).

MOH (2006). The National Policy Guidelines for Sexual and Reproductive Health Services. Kampala, Uganda, 19-34.

National Council for Population and Development (NCPD-1999), Central Bureau of Statistics (CBS) (Office of the Vice President and Ministry of Planning and National Development) [Kenya], and Macro International Inc. (MI). 1999. *Kenya Demographic and Health Survey 1998*. Calverton, Maryland: NCPD, CBS, and MI.

Nwosu, E., Urama, N., and Uruakpa, C. (2012). Determinants of antenatal care services utilization in Nigeria. *Developing Country Studies*, *2*(6).

Okurut, F. N., Kepaletswe, F., & Mmopelwa, D. (2013). Determinants of birth weight in Botswana. *International Journal of Academic Research in Economics and Management Sciences*, *2*(52).

Omondi-Odhiambo (1999). Fertility Change, Family Planning and the Impact of CBD in Siaya District, Kenya. A Study Report for Ministry of Health/ GTZ reproductive Health Project, Kenya.

Oye-Adeniran B., Adewole, F., Umoh, V., Oladokun, A., Gbadegesin, A., Ekanem, E., Yusuf B., Odeyemi, O., Iwere, N. and Mahmood, P. (2006). Community based study of contraceptives behaviour in Nigeria. *African Journal of Reproductive Health*, Volume 10(2):90-104.

Gwatkin D., R., Rutstein S., Kiersten J., Suliman E., Wastaff A. and Amouzou A. (2003). Socio- Economic Differences in Health, Nutrition and Population within Developing countries.

Befeno K. (2010). Determinants of condom use in Zambia: a multilevel analysis.

Penchansky R., and Thomas, W. (1981). The concept of access: definition and relationship to consumer satisfaction. Med Care; 19:127-40.

Rosenzweig, M., and Schultz, P. (1982). Consumer demand and household production: The relationship between fertility and child mortality. *The American Economic Review*, *73*(2), 38–42.

Rosenzweig, M., and Schultz, T. (1983). Estimating a household production function: heterogeneity, the demand for health inputs and their effects on birth weight. *Journal of Political Economy*, *91*(5), 723–746.

Schultz, T., (2008). Population Policies, Fertility, Women's Human Capital and Child Quality: in Schultz T.P. and J. Straussn (2008) (eds Handbook of Development Economics., Vol. 4, Chapter 52). Amsterdam; North-Holland.

Shengelia, B., Murray, C. and Adams, O. (2003). Beyond access and utilization: defining and measuring health-system coverage. In Murray C.J.L., Evans D.B., editors. Health systems performance assessment: debates, methods and empiricism. Geneva: World Health Organization. p. 221-34.

Torrey, B. (1992). World Population Data sheet. Population Reference Bureau.

Uwazi (2010).Malnutrition: Can Tanzania afford to ignore 43,000 dead children and Tshs 700 billion in lost income every year? (Policy Note No. 02/2010). Dar es Salaam: Sikika Policy Forum.,

Velasco (2001). Calidad en los Servicios de Anticoncepción de El Alto, Bolivia,accessed online at www.fhi.org/en/wsp/wssyn/syn4.html.

Westoff, C. and Bankole, A. (1998). The Time Dynamics of Unmet Need: An Example from Morocco. *International Family Planning Perspectives* 24(1):12-14.

WHO (2013). Health statistics and information systems, Estimates for 2000–2012.

WHO (2014a). *World health statistics 2010.* Geneva: World Health Organization.

WHO (2014b). UNFPA, The World Bank, United Nations Population Division.

World Bank (2004). The Millennium Development Goals (MDGs) for health: rising to the challenges. Washington DC: World Bank.

World Bank (2007). Development and the next generation. World Development Report, Washington, DC: International Bank for Reconstruction and Development.

World Health Organization (2001). Commission on Macroeconomics and Health. Macroeconomics and Health: Investing in health for economic development. Geneva.

World Health Organization (2012). Trends in Maternal Mortality 1990 to 2010: WHO, UNICEF, UNFPA and The World Bank estimates. Geneva: Department of Reproductive Health and Research, World Health Organization (WHO).

Raylynn, O. (1960). Contraceptive use in Ghana: the role of service availability, quality and price.