Modeling Socio-Demographic Factors as Covariates for Choice of Modern Family Planning Method among Women of Reproductive Age 15-49 Years

A Multinomial Logistic Regression Approach

By Joshua Atunga

W62/10965/2018

A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of Master of Science Degree in Medical Statistics; University of Nairobi

The YEAR 2020

DECLARATION

I Mangare Atunga Joshua hereby declare that this research is my original work and has not been presented for any award of a degree or diploma in any university before.

Signature.....

Date.....

Atunga Mangare

W62/10965/2018

CERTIFICATE OF APPROVAL

This thesis has been submitted for the award of Master of Science Degree in Medical Statistics University of Nairobi with our approval as the supervisors.

Dr. Samuel Kimani

Lecturer

School of Nursing Sciences

University of Nairobi

Signature  Date; 24/11/2020

Dr. Anthony Karanjah

Lecturer

Faculty of Science and Technology

Multimedia University of Kenya

Signature  Date; 23/11/2020

DEDICATION

This project is dedicated to all the children of this nation who believe that success is by choice and not by chance.

ACKNOWLEDGEMENT

I express my sincere gratitude to my supervisors Dr. Samuel Kimani and Dr. Antony Karanjah for their guidance and advice in the execution of this research project. I also would like to acknowledge Dr. Dufton Mwaengo and Professor Julius Oyugi, director and deputy director UNITID respectively for their unwavering support throughout my student years.

ABBREVIATIONS

UN: United Nations

WHO: World Health Organization

KNH: Kenyatta National Hospital

IUD: Intrauterine device

UON: University of Nairobi

ERC: Ethics Review Committee

KDHS: Kenya Demographic Health Survey

KNBS: Kenya National Bureau of Statistics

UNFP: United Nations Population Fund

ODPHP: Office of Disease Prevention and Health Promotion.

EAs; Enumeration areas

NASSEP; National Sample Survey and Evaluation Programme.

OPERATIONAL DEFINITIONS

Family planning methods: the use of the various contraceptives to prevent a woman from getting pregnant

Contraceptives: drugs or materials that prevent fertilization of the ovum or implantation of a fertilized ovum.

Modern methods: new methods of contraception that are provided in hospitals.

LIST OF TABLES

LIST OF FIGURES

Table of Contents

Abstract

Introduction: Family planning refers to information, ways and methods to help people decide whether to have children and also do it at the right time. It comprises of a varied array of contraceptives and they include pills, implants, intrauterine devices, surgical procedures that limit fertility, and barrier devices such as condoms – as well as non-invasive approaches such as the calendar technique and self-restraint from sexual intercourse. Contraception also involves education on how to conceive, desirable time, as well as remedies for failing to get pregnant (UNFPA, 2019).

The World Bank (2019) estimated that the global population stood at 7.5 billion people with fast growth being recorded in low-income countries. The UN (2020) estimates the world population to reach 9.6 billion people by the year 2050 and that Africa is the fastest growing in terms of population and will account for half of this speculated increase. If population growth is not controlled, it can lead to economic stretch on both natural and social resources e.g. health and this can lead to immense suffering and even increase world mortality levels.

The study aims to identify the cause of these variations by analyzing the effect socio-demographic factors on modern family planning methods. If the cause of variation among the methods of choice can be identified, then it will be possible to come up with specific messages to target certain groups to encourage the use of contraceptives.

Objective: This study aimed at modeling socio-demographic factors as determinants of the choice for modern family planning methods using KDHS 2014 data.

Methods: This was a quantitative cross-sectional study with both descriptive and analytical statistics. This study covered the whole republic of Kenya since it employed data records from the Kenya Demographic Health Survey of 2014 collected throughout the country. The study population comprised of eligible women in the reproductive age category (15-49) years and that were sampled randomly from KDHS 2014 data.

A sample size of 375 participants was obtained using a difference in proportion formula. Observations that met the inclusion criteria were sampled using simple random sampling method. R software version 4.0.2 was used for sampling.

Both descriptive statistics e.g. means and frequencies and inferential statistics e.g. Pearson's chi-square and regression were carried out on the data. The analysis of data was done using R version 4.0.2 and STATA version 13.0.

The expected outcomes for this study were that provision of family planning services will be tailor-made to meet the needs of the various socio-demographic groups rather than being general, that there will be an increase in contraceptives consumption as this study will help address gaps in family planning service provision, and the insights gained will help the government in the procurement of contraceptives as per the various socio-demographic groups.

Results: The study had 375 participants with a mean age of 30.08 years. The youngest study participant was 15 years while the oldest was 49 years old. In terms of age categories, the largest number of participants was between ages 25-29 years while the least was between ages 15-19 years.

A Pearson's chi-square test of association showed that all the socio-demographic factors in this study were significantly associated with the choice of contraception except age; place of residence (***p-value* < *0.01***), religious affiliation (**0.01**), level of education (***p-value* < *0.01***), socioeconomic status (***p-value* < *0.01***), age of a woman (**0.10**). All the p-values below 0.05 indicate a significant statistical association between the factors and the contraceptive method of choice.

A multinomial logistic regression carried out to compare the choice of contraception among the levels of the covariates produced the following odds ratios, residence (urban) OR = 1.193 (0.941, 1.512) for the use of pill compared to the condom, OR = 1.227 (1.009, 1.492) for implants when compared to the use of condoms. The use of pills, injections and IUCDs was not significantly different as opposed to using condoms when rural women were compared to urban women. The various levels of education also showed differences in some while others were not. Using no education and condom as reference covariate and outcome respectively; for the pill method, primary education OR =0.936 (0.695, 1.260), secondary OR = 0.557(0.237, 1.408), higher education OR = 1.664 (1.282, 2.160). For the injections; primary education OR =0.364 (0.290, 0.455), secondary OR = 1.580(0.982, 2.542), higher education OR = 1.980 (1.650, 2.375). For the use of IUCDs, primary education OR =0.621 (0.485, 0.795), secondary OR = 1.756(1.052, 2.930), higher education OR = 1.898 (1.551, 2.322).
Another variable of interest is the socio-economic levels where upper and middle were compared with lower class as a reference covariate and condom as a reference method. The odds ratios were as follows; for the pill, middle class OR = 0.634 (0.442, 0.910), upper class OR = 1.517 (1.117, 2.060). On injections, middle class OR = 1.161 (0.925, 1.456), upper class OR = 0.785 (0.633, 0.972). For the implants, middle class OR = 0.876 (0.668, 1.149) and upper class OR = (1.002, 1.649). The IUCDs was the last method under which socio-economic classes were compared and had the following odds ratios, middle class OR = 1.096 (0.856, 1.404), upper class OR = 0.866 (0.684, 1.097).

Chapter1: Introduction

1.1 Background

Family planning refers to information, ways and methods to help people decide whether to have children and also do it at the right time. It comprises of a varied array of contraceptives and they include pills, implants, intrauterine devices, surgical procedures that limit fertility, and barrier devices such as condoms – as well as non-invasive approaches such as the calendar technique and self-restraint from sexual intercourse. Contraception also involves education on how to conceive, desirable time, as well as remedies for failing to get pregnant (UNFPA, 2019).

The World Bank (2019) estimated that the global population stood at 7.5 billion people with first growth being recorded in low-income countries. The UN (2020) estimates the world population to reach 9.6 billion people by the year 2050 and that Africa is the fastest growing in terms of population and will account for half of this speculated increase. If population growth is not controlled, it can lead to economic stretch on both natural and social resources e.g. health and this can lead to immense suffering and even increase world mortality levels.

Contraception is among the ten most important community health successes of the 20th century. Accessibility of contraception amenities permits persons to attain preferred child spacing and household size and adds to better health results for infants, children, women, and families (ODPHP, 2020). Globally, the main challenge with family planning services is the lack of access or limited access (UN 2019). There are an estimated 80 million women who require FP but cannot access the services globally (UN 2019).

In terms of contraception methods available, the UN (2019) states that the most prevalent method of contraception in Sub-Saharan Africa was injectable. It also concludes that there are countries across the world where a single method accounted for more than 50% of all the methods in terms of its use. In 2018, the World Health Organization estimated that 214 million women who wanted to prevent conception could not access modern family planning methods. This can be attributed to under-supply of modern family planning methods. For this impediment to be curbed, therefore, it was important to understand how social, economic and demographic factors affect the choice of method to inform the supply of modern contraceptive methods. A

research carried out among Jordanian women by Alyahya, M. et al (2019) indicates that among the study participants, majority 56% were on IUCDs followed by the pill at 21% and condoms at 13%. The choice of whether to use contraceptive and method of contraception is said to be a decision made by husband and wife.

While studying trends in family planning utilization across counties using DHIS2 data, Nderitu et al. (2017) established that the most common method among women was injectable contraceptive which stood at 54%. The same trend was also seen in KDHS data where injections stood at 51% of overall family planning utilization. In this same study, long term family planning utilization stood at 4.4%.

Various factors affect a woman's choice of contraceptive method. These factors include but not limited to provider attitude, number of children, and the experience with the contraception method itself, partner's influence, and level of education and attitude issues (Frost, J. and Darroch, E., 2004). According to Obwoya, G., Wulifan, K. and Kalolo, A. (2018), a study conducted on 380 women in Juba, South Sudan revealed that various factors were associated with a woman's choice of contraceptive use, these factors include; the number of children, education level, occupation, contraceptive knowledge level and women's attitudes towards contraceptive use.

Research conducted at a County health facility in rural Kenya concluded that a younger age, having education of a higher level, employed women, being in a marriage and availability of contraceptives in health facilities informed contraceptive use among postpartum women (Jalong'o et al, 2017).

In the year 2014, Nkonge, C. conducted a study to assess hormonal contraceptive use among women at KNH and found out that 42.8% were on contraceptives and that the use of contraceptive had a positive association with the number of children. This author also established that 56.1% of the studied women used hormonal methods of family planning whereby majority used injectable methods followed by skin implants and pills. In the same study, the author also concludes that the choice of contraceptive method was associated with age and level of education of a woman. Nkonge, C. also implies that fewer side effects, a longer action period and the effectiveness of a method determined method choices by women.

My study aimed at exploring how various socio-demographic dynamics affect the option of family planning method among women. It was conducted by the use of data from KDHS 2014 on women who were on modern family planning methods.

This study focused on the modern contraceptive methods that were categorized in groups i.e. Condoms, implants, pills, intrauterine contraceptive devices and injectable contraceptives.

Among these methods, implants, pills and injectable contraceptive contain hormones while IUCDs do not. A number of these methods have a probability of failure hence a need to encourage women to take up the methods with the least chances of failure.

The population of Kenya has been growing persistently since independence and this can be linked to low family planning coverage among the various socio-demographic classes of the women. On 1/12/2011 it was stated that the population of Kenya had grown by 27.7 million between 1969 reaching 38.6 million by 2009 and that the population is set to continue growing rapidly (Kenya Population Datasheet, 2011). This is 40 years giving a growth rate of 692,500 people per year.

According to Fengler, W. (2010), Kenya's population had doubled to about 40 million in 25 years. The question that arises here is why the population continues to grow rapidly despite the rising coverage and uptake of family planning services. The main reason here is that we may not be fully utilizing the available family planning opportunities in the country.

It was therefore important to look into the various socio-demographic factors and find out whether they influence the choice of contraception in women. By understanding these factors, family planning approaches can be changed to encourage women to choose methods that are not likely to lead to unintended pregnancies. Of importance, therefore, is to try and establish the reasons behind the variations of methods of choice.

While appreciating the importance of short span means of contraception, it is important to encourage the use of methods with a longer span as they provide a sure way of population control which is the main aim of family planning in any country. To do public awareness of this, preferences have to be established through research to find a cure in the ensuing gaps.

In the 2014 KDHS survey, family planning prevalence in Kenya was estimated at 53%, after that, The National Council for Population Policy and Development revised national targets up to

58% by the year 2018, 66% by 2030 and 70% by the year 2050 respectively (The East African, March 2018). Still in the 2014 KDHS report, the prevalence in method use was as follows, injectable at 47.9%, implants stood at 18.2%, the pill was at 14.1%, condom 7.9% and IUD at 5.9%. In the year 2020, family planning prevalence in Kenya is estimated at 58% (Family Planning 2020).

1.2 Problem Statement

Good family planning practice in a country is associated with control in population growth and small and manageable members within households. The controlled population within a country means better service provision by governments i.e. accessible, affordable and quality health, improved education standards and access to job markets hence better GDP for a country.

Improved and accessible health services mean better health for mothers, children and the population in general hence reduced deaths among individuals in this category. Proper contraception reduces unplanned conception and therefore unsafe abortion will also be reduced. Reduced unsafe abortions will reduce complications from the same.

Kenya's Ministry of Health estimates that by October 2019, the contraceptive prevalence in Kenya stood at 58%. Despite the increased utilization levels, we are still seeing a large increase in population. There could be a need to foster the use of certain methods to realize the intended purpose of family planning programs. In the KDHS 2014 survey, family planning prevalence in Kenya was estimated at 53%. This shows that in the four years between 2014 and 2018, family planning uptake had increased by 5%. There is a clear trend of increase in the uptake of these services.

In contrast to the increase in contraceptive uptake, Kenya has seen a continuous increase in its population instead of slow growth. Between 2009 and 2019, a period of 10 years, the population of Kenya grew by 9.9 million, a 2.2% increase (KNBS, 2019).

With regards to the above contrast, I believe this study explains to some extent how socio-demographic factors play a role in family planning practices. My study, therefore, strives to bridge the gap between increasing contraceptive use and fast population growth instead of a slowed population increase.

In a study conducted in Nigeria, Dr AKPA, M. and Ikpotokin, O. (2012), found that women without education and those with secondary and below education had 36% and 17% more children respectively as compared to those with higher-level education.

One way of assessing family planning uptake in a country is by looking at the fertility levels in the population, and if fertility levels are dynamic in the population, then it is important to investigate the causes. From the citation above, the study found that education as a socio-demographic factor affects fertility among women and is therefore likely to imply family planning choices.

If this study finds significant differences in family planning methods among the various aforementioned socio-demographic factors, I believe it will act as a guide for procurement of contraceptives in the country and also on the groups of interest to be encouraged to use certain methods and not others. The reason for encouraging women to choose certain methods is because there will be a need for a constant reminder to use the choices that are not long-term. For example, short term methods like condoms and pills are likely to be forgotten hence exposing the woman to unwanted pregnancies. With a good prescription of these services based on socio-demographics, population control will become feasibility; unwanted pregnancies will be drastically reduced and hence we will not have illegal and unsafe abortions.

1.3 Significance of the study

While appreciating that population dynamics have changed since 2014, I believe the KDHS 2014 data can still provide insightful information that can be applied to the present. This study provides information on how socio-demographic factors affect family planning practices. The decisions made from this information can go a long way in informing public messaging on contraception and that can lead to better uptake of family planning services among women of reproductive age, improve spacing of children in families and increase standards of living in households. This study also sought to add on to the existing knowledge of family planning practices and to better the understanding of the same and its dynamics.

2. 0 CHAPTER TWO: Literature review

To get a clear picture of the effects of the various determinants, the literature review for this study will focus on family planning uptake among women both in Kenya and global. The study will also review the literature on the various features that impact contraceptive practices amongst females i.e. age of the woman, education level, socio-economic status, residence and religion

2.0.1 Age of a woman

Age of a woman is very important when it comes to fertility. At certain ages, women are highly fertile hence the need for contraception to help regulate the number of children that they can have. Higher fertility rates increase the need for family contraceptives. A family control technique alone is not enough until it is a highly effective method. It is therefore important to understand how age affects the choice of method and how women can be helped to choose highly effective methods to enable them to control the size of their families.

According to Ochako et al. (2016) when comparing the choice of contraceptive method between slum and non-slum areas, the use of extended period methods was found to be higher among older women as compared to younger women. Women who were above 25 years had higher chances of being under long term contraception compared to women below 25 years.

In a study conducted by Simpskins, P. (1988), women of different ages choose different contraceptive methods for different reasons. He suggests some of the reasons such as convenience, expenses, availability, attitudes, benefits and maturity of the contraceptive user. In his findings, young women from menarche to age 35 were likely to use oral contraceptive pills and condoms as compared to their older counterparts. For family planning methods to be available, the care provider has to know what is needed by whom and where it is needed. This way, women are not likely to go back home without contraceptives because of unavailability.

In Dozier, A. et al, it is implied that almost a third of conceptions in women aged 35 and above are not planned. The study examined contraceptive use among women aged 35 and above. The outcome was tied to unintended pregnancy. They found that women who did not experience unintended pregnancy were using contraceptive methods to treat medical conditions. Those who experienced unintended pregnancies considered themselves a lower risk for pregnancy or were in

unstable marriages. The investigators recommend that healthcare providers should give clear and informative messages to women using family planning.

In 2004, Frost, J. and Darroch, E. (2004) found out that 38% of women aged 18-44 years and on contraceptive used pills, 18% were using other long-acting hormonal methods i.e. 7% on injectable, 5% on implants and 5% on IUCDs. Understandably, most women tend to stick to the same method over a long time. Such studies are therefore informative as they can aid the procurement departments of hospitals and other organizations that are engaged in family planning activities when ordering family planning methods to ensure that the amounts procured are based on needs.

In the same study above by Frost, J. and Darroch, E. when it comes to specific age groups, 20% of those in the category of 18-24 years were using methods of longer duration as compared to 14% of those between 35-44 years. From the previous studies that have been reviewed on the same topic, the results vary greatly depending on where the study was conducted.

In some studies, the use of long term methods tends to be high among older women while younger women tend to use short-term methods. It is, therefore, in my opinion, that other factors are at play in influencing this disparity. In Kahraman, K. et al (2012) age was established to have a significant association with method of choice amongst women. It was found that women of different ages prefer different methods of modern contraception.

2.0.2 Education level

According to Curtis, L. and Magadi, C. (2004) uneducated women were noticed to use injectable contraceptives more as compared to their educated counterparts. The same was also noticed among women who had little access to family planning messages.

From the above citation, women with little education have less knowledge of contraceptives and the majority of them use whatever a friend is using. This is why we large numbers of uneducated women using injections. Also use of long term methods to them may be scary as they are likely to associate them with infertility.

While studying factors related to contraception choices and varying method practice, Frost, J. and Darroch, E. (2004) established that those without college education used long-term methods

as compared to pill use. The same paper estimates that 89% of reproductive women in the USA use contraception and that half of all accidental pregnancies, about one and a half million occur due to incorrect use of a method or due to inconsistencies. It is therefore imperative that care providers provide a wide range of methods, provide clear instructions and help in the selection of methods that can greatly limit chances of unintended pregnancy. To fulfil these tasks, the various methods of family planning have to be availed based on existing evidence and on how much they are needed.

While assessing the influence of education and occupation on family planning in rural India, Vijayasree, L. (2017) observed that the use of contraceptives decreased with education level. This observation is contrary to what has been established in many studies. It would, therefore, be more informative to find out how the method that is used varies with the level of education. This can be done to find a new approach of getting these women into subscribing to modern contraceptive use.

Using data collected in the 2014 demographic health survey, Larson, C. and Stamfors, M. (2014) found that there was a high association between education level and contraceptive use among women. Therefore, it is important to look at the utilization of each method of modern contraception and the education level.

2.0.3 Marital Status

The marital status of a woman plays a key role when it comes to family planning. Women who are not in marriages may not find it necessary to use long-term contraceptives when likened to their married colleagues. This can be explained by the fact that they don't regularly engage in social habits that are likely to predispose them to get pregnant. Having correct figures on marital status is therefore important as it will make it easier to avail their methods of interest.

In rural Bangladesh, Kamal, M. and Islam, A. (2010) studied the effect of socioeconomic impact on the choice of contraceptives and found that women who were married and not pregnant had a 61% prevalence in the use of contraceptive. They also established that 49% of those who were on contraception used modern methods. In this same study, the oral pill was used prevalently by these women. The significant factors in contraceptive use and choice of the technique were; age, women's education and place of residence.

Ochako et al. (2016) while studying factors influencing the choice of contraceptive method among slum and non-slum areas found that women in marriage were likely to use a modern method as compared to their unmarried counterparts. According to Frost, J. and Darroch, E. (2004) in their study of contraceptive choices in the United States, they established that the use of the pill was associated significantly with women who had been out of relationships for more than four years. Women who are not in relationships may not have a reason to use long-term methods as their partners may be casual ones.

In Kahraman, K. et al (2012) the association between the marital status of a woman and contraceptive choice was found to be significant. The importance of knowing how marital status affects the choice of contraceptive method is to help in the procurement of such methods after looking at the numbers of women in terms of marital status.

2.0.4 Type of Residence

Type of residence will be divided into rural and urban. The intention of this is to compare the choice of contraceptive method in use between slum and non-slum areas and find out how this affects the choice of method.

In 2004, Curtis, L. and Magadi, M. in their study of contraceptive method choice, determinants and trends found that the use of long-term contraceptive techniques was increasing over time among urban women as contrasted to rural women. Higher levels of use of injectable contraceptives were observed in rural areas as compared to towns.

In formal urban areas, women hold meaningful employment or occupation hence the desire for long term contraceptives as compared to rural women. The latter can as well apply to women who live in informal settlements of urban areas.

In the years 2009/2010, Ochako, R., Izugbara, C., Okal, J., Askew, I., and Temmerman, M. conducted a study to compare the choice of contraceptives between formal and non-informal areas in Nairobi where they established that there was a non-significant difference in the use of short term methods between the two areas. They found a slightly higher use of long term methods among non-slum women when compared to their slum counterparts. Also, more women in slum areas reported use of no family planning as compared to their counterparts.

2.0.5 Socio-economic statuses

When examining contraceptive use among city slums dwellers, Oketch, C., Wawire, N. and Mburu, T. (2011) found that a woman's income level affected her contraceptive use. The level of income here relates to low contraceptive use among slum women. Theoretically, women in the informal sector and who have little to do and low income are not likely to be interested in family planning services as having children cannot affect their daily schedule.

2.0.6 Type of Religion

When examining socio-economic and religious differentials in the consumption of contraceptive services, (Tigabu et al, 2018) found out that Muslims were 65% less likely to utilize modern contraceptives as compared to orthodox Christians.

From the above findings, a government may increase access to family planning but still end up with low levels of utilization. It is therefore important that targeted education is conducted to reduce religious influences that may end up curtailing contraceptive uptake.

According to Sundarajan et al (2019), religion plays a central role in determining family planning uptake. Most people who support religious views on family planning say that God wills them to have as many children as possible while others argue that they can only sire children that they can raise comfortably. This stems from the fact that people have different religious views.

Muslims in Asia tend to be more pro-natalist as compared to Christians in the same setting (Morgan et al. 2002), as much as contraception is not prohibited in Islam, it is mostly advocated against for various reasons.

Conceptual framework

2.1 Relationship between variables

From the conceptual framework above, the independent variables have been placed on the left side and dependent variables on the right. The arrow shows that independent variables affect dependent variables. Beginning with age, at different ages, women are likely to prefer different methods of family planning. Younger women may desire to use short term methods e.g. condoms and pills while older women may desire to use long term methods e.g. implants.

From theory, women with a higher level of education may need long term methods of family planning as they are likely to be engaged in employment or other time-consuming careers that may require one to have good spacing between children. On the other hand, women who have little to no education may not see the necessity of children spacing hence end up using short term methods that may not necessarily prevent pregnancy for longer periods.

On the other hand, religion can be a good determinant of family planning practices in that there are religions that prohibit family planning while others do not. In this regard, women from various religions may find other methods more convenient than others. Socio-economic status also come in handy when it comes to family planning as women from higher social classes have been known to have fewer children as compared to their counterparts from lower social classes. It is therefore good to know family planning practices among higher social classes to come up with information strategies that can help women from lower social classes in having fewer children.

When it comes to the place of residence, family planning services are likely to be easily accessible in urban areas as compared to rural areas. Practices on family planning consumption

may also differ among rural and urban women. And also women in rural areas tend not to use the various contraceptives as compared to their urban counterparts.

2.2 Justification

From the available literature especially in Kenya, socio-demographic factors have not been utilized widely in determining the cause of low family planning uptake despite the services being provided countrywide by the government and non-governmental organizations. Socio-demographic features have a role in determining the choice of contraception methods among women as seen in literature from other countries.

Proper knowledge and understanding of how these factors affect family planning can go a long way in informing family planning practices and approaches in developing countries to help the governments reach their family planning targets and successfully manage population growth and attain the countries projected economic growth. Fertility in developing countries especially Kenya continues to vary among the various social classes and for many years, these social classes have remained somehow an impediment in the government reducing fertility and attaining population control. This study, therefore, aimed to look into these various aspects of demographics and hopefully come up with solutions aimed at reducing fertility levels for the government to be able to meet its targets of economic growth through control of the population.

2.3 Research Questions

1. Is there an association between socio-demographic factors and choice of contraception?
2. Does education affect the choice of contraception in women?
3. How do family planning methods differ in terms of place of residence?
4. What is the relationship between the choice of family planning method and the age category of a woman?
5. Does religion contribute to choosing a family planning method by women?
6. What is the effect of socio-economic status on women when choosing contraceptive methods?

2.4 Hypothesis

H0: There is no relationship between the various determinants and the choice of family planning methods

H1: There is a relationship between the various determinants of family planning and the method of choice.

2.5 Objectives

2.5.1 Broad Objectives

a. Model socio-demographic factors as determinants of the choice for modern family planning methods.

2.4.2 Specific Objective

a. Test whether there is an association between socio-demographic factors and the contraception method of choice.
b. Analyze the effect of each socio-demographic factor on how it affects contraception choice among women.

3.0 CHAPTER THREE: Methodology

3.0.1 Design of the study

This is a quantitative cross-sectional study. It employed survey data collected in the year 2014 through KDHS-2014. The study looks at both descriptive and inferential statistics.

3.0.2 Study site

The study used secondary data from KDHS-2014. The survey for this data was done countrywide realizing data from the whole country hence this study contained observations from all over Kenya.

3.0.3 The study population

The study population was women of childbearing age from 15-49 years who were on modern contraception.

3.0.3.1 Inclusion criteria

1. Women of reproductive age from 15-49 years of age.
2. Those on modern methods of family planning

3.0.3.2 Exclusion criteria

1. Those who were not on modern methods of family planning.
2. Women below age 15 and above age 49.

3.0.4 Sample size determination

Sample size was calculated using a difference in proportion (Daniel, 1999).

Current prevalence of family planning in Kenya is 58%, hence p=0.58, q = 0.42

Level of significance is 0.05 corresponding to $Z_{\alpha/2}$ of 1.96.

Margin of error (e) = ±0.05

$$n = (Z_{\alpha/2})^2 * pq / e^2$$

$n = [1.96^2 * 0.58 * 0.42]/[0.05^2]$

$n = 374.3$

$n = 375$

3.0.5 Sampling method

Data collection for KDHS 2014 was done at the household level using structured questionnaires administered by interviewers who visited only the pre-selected households where no replacement of households was allowed (KNBS, 2014)

The sample for the KDHS 2014 was drawn from a master sampling frame, the Fifth National Sample Survey and Evaluation Programme (NASSEP V) created by the Kenya National Bureau of Statistics in the year 2012. The frame contains a total of 5360 clusters which are divided into four equal subsamples. The clusters were chosen using stratified probability proportional to size sampling from 96,251 enumeration areas (EAs) in the 2009 Kenya Population and Housing Census. Two subsamples that were developed by NASSEP V in 2013 were used in KDHS 2014. In the NASSEP V, each of the 47 counties in Kenya was divided into urban and rural areas. The 47 counties resulted in 92 sampling strata since Nairobi and Mombasa have only urban areas (KNBS, 2014)

The total numbers of clusters selected in the whole country were 1,612, with 995 being in rural areas and 617 in urban areas. To meet the objectives of KDHS 2014 of representativeness, the sample was designed to have a total of 40,300 households from the 1,612 clusters. The samples were chosen independently in each stratum using a two-stage sample design. In stage one, the 1612 EAs were chosen with equal probability from the NASSEP V frame. In the second stage, 25 households were selected from each of the clusters (KNBS, 2014)

3.0.6 Variables

3.6.1 Predictor variables

Age of a woman, education level, place of residence, Religious status, socio-economic level

3.6.2 Dependent variables

Condoms, pills, injectable, implants, IUCDs

3.0.7 Data source

Permission to access data was sought from the administration of the KDHS database after the study had been reviewed and authorized by the KNH-UON Ethics and Research Committee.

3.0.8 Quality assurance

The KDHS data is provided by KNBS which is a reputable body and therefore the data is most likely to be of good quality. The data distribution characteristics were checked for normality to confirm the representativeness of the sample. Records were checked for completeness.

3.0.9 Ethical consideration

Approval was obtained from KNH-UON Ethics and Research committee for authorization to carry out this research. Permission was sought to obtain data from the KDHS management.

For confidentiality purposes, the data did not contain identities of the clients but were rather identified by codes. Client consent forms were not included because this study used secondary data. Once the said information was obtained, it was used solely for this study and was not distributed to any other party.

3.1 Management of data and analysis

Exploration of data was carried out and the relevant variables and observations extracted. The necessary cleaning and recoding were done in preparation for analysis.

Once the data had been cleaned and recoded, statistical analysis was done by use of R software version 4.0.2 and STATA version 13.0. Both descriptive and inferential statistical analyses were conducted on the data.

The main analyses done were; descriptive statistics to view the prevalence for every method, the descriptive data was also depicted in pictorial presentation, multinomial logistic regression was done to establish how the various factors influence family planning choices.

For a multinomial model, m-1 binary logistic models were fitted simultaneously.

$$ln[p(y=m)/p(y=1)] = \beta_0 + \beta_1 Age + \beta_2 Education + \beta_3 social\_status + \beta_4 Residence + \beta_5 Religion + \beta_6 Children$$

3.2 Study results dissemination

The outcome of this study was presented to the panel of examiners and shared to the general public through the University of Nairobi online repository.

4.0 Chapter Four: Results

Part A: Descriptive statistics

The study had 375 participants with a mean age of 30.08 years. The youngest study participant was 15 years while the oldest was 49 years old.

In terms of age categories, the largest number of participants was between ages 25-29 years while the least was between ages 15-19 years.

Tables and chi-square tests of association among the various variables

Place of residence and choice of contraception

Table1: Modern contraceptive use and place of residence

	Residence		
Method	rural	urban	Total
condom	11	20	31
implants	34	39	73
injections	118	67	185
iucd	12	17	29
pill	26	31	57
Total	201	174	375

The table shows that 201 of the participants were from rural areas while 174 of them were from urban areas. It also shows that the most used method is the injectable followed by the implants and the least used was the IUCDs. The table also shows that more women from rural areas than those from urban areas used all of the contraceptive methods except implants whose use was higher among urban women than rural women.

Pearson's Chi-squared test of association between contraception method of choice and a woman's place of residence

X-squared = 148.78, df = 4, p-value < 0.01

The chi-square output above shows a significant association between a woman's place of residence and the contraceptive method of choice.

Level of Education and choice of contraception

Table2: Level of education and modern contraceptive use.

	Education				
Method	higher	no educ..	primary	secondary	Total
condom	12	0	10	9	31
implants	7	5	39	22	73
injections	11	9	112	53	185
iucd	6	0	12	11	29
pill	6	2	29	20	57
Total	42	16	202	115	375

The table above shows that the majority of participants were primary school leavers at 202 followed by secondary school leavers at 115 and the least were those with no education at 16. Participants with higher education were 42. Among the various education levels, the most used contraceptive method across all of them was the injections while the least used was the pill method. Most users of condoms were those with higher education while the least were those with no education. The table also shows that the most preferred long term method was the implant followed by the intrauterine devices.

Pearson's Chi-squared test showing the association between the level of education and the contraceptive method of choice.

X-squared = 511.98, df = 12, p-value < 0.01

The level of a woman's education was established to be significantly associated with participants' contraception method of choice.

Religious affiliation and contraceptive use

Table3: Shows how members of different religions use modern contraceptives

	Religion				
Method	catholic	muslim	other	protest..	Total
condom	4	0	0	27	31
implants	16	9	1	47	73
injections	37	8	0	140	185
iucd	7	1	0	21	29
pill	10	3	1	43	57
Total	74	21	2	278	375

From the table showing religious affiliation and contraceptive use, the majority of the participants were Protestants at 278 followed by catholic with 74 members. The least were others at 2 participants while Muslims were 21. In terms of contraceptive use, the most used method was the injection which also happened to be the most used across all the religions while the least used method was the intrauterine devices.

Across all the contraceptive methods, Protestants happened to be the highest consumers followed by catholic in terms of numbers. It is also evident that the majority of Muslims preferred the implants and injection while the least preferred condoms and intrauterine devices. It is also clear from the table that condom was the least preferred method across all religions except protestants.

Pearson's Chi-squared test for association between religious affiliation and the preferred method of contraception.

X-squared = 28.238, df = 12, p-value = 0.01

The chi-square test above with a p-value of less than 0.05 shows that there is a significant association between a woman's religious affiliation and the preferred method of contraception.

Socio-economic class and contraceptive use

Table4: Modern contraceptive use by women from different socio-economic status.

Method	Economic lower	middle	upper	Total
condom	3	9	19	31
implants	26	11	36	73
injections	74	41	70	185
iucd	2	7	20	29
pill	17	10	30	57
Total	122	78	175	375

Under socio-economic status, the highest number of participants was from the upper class at 175 followed by lower-class at 122 members and the least participants were from the middle class at 78 members. When it comes to contraceptive use, the most used method across all the economic classes was the injections at 185 and the lower class were the most users of the method. The second most preferred method among the various classes was the implant with most users coming from the upper class with a total of 36 users, followed by lower-class at 26 and lastly by the middle class at 11 users.

The least used method was IUCDs at a total of 29 participants with most users coming from the upper class at 20 followed by middle class at 7 and last by the lower class at 2 members. Among the short term methods, condoms and pills were most preferred by those from the upper class while injections were preferred by members of lower socioeconomic status.

Pearson's Chi-square test of association between socioeconomic status and a woman's preferred method of modern contraception.

X-squared = 471.95, df = 8, p-value < 0.01

There is a significant association between a woman's contraception method of choice and their socio-economic status.

Age Distribution and Contraception of Choice

Table5: Age category of the participants and contraceptive of choice

	Age1							
Method	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
condom	4	7	9	2	7	2	0	31
implants	3	12	23	16	12	5	2	73
injections	7	50	51	30	30	10	7	185
iucd	0	2	9	5	8	3	2	29
pill	0	8	13	11	14	8	3	57
Total	14	79	105	64	71	28	14	375

From the table above, it's clear that the most used method across all the age categories is the injections. Women between ages 15 and 19 did not use pills and IUCDs while those between ages 45-49 did not use condoms. The table also shows that the most used method was the injectable while the least used was IUCDs. It's also clear from the table that the use of long term methods i.e. implants and IUCDs increases as reproductivity of a woman increases and then decreases as age advances towards menopause.

Pearson's Chi-square test of association between age category of a woman and her preferred method of modern contraception.

X-squared = 33.021, df = 24, p-value = 0.10

Pearson's chi-square test above shows that age is not significant in determining the choice of contraceptive method.

All the chi-square tests show that all the categorical variables i.e. residence, education; religion and socio-economic status are significantly associated with the choice of contraceptive method. In other words, these variables play a key role in determining what method of contraception a

woman will use. Only age as a category was found not to have a significant association with the choice of contraception.

Age Distribution of the Participants

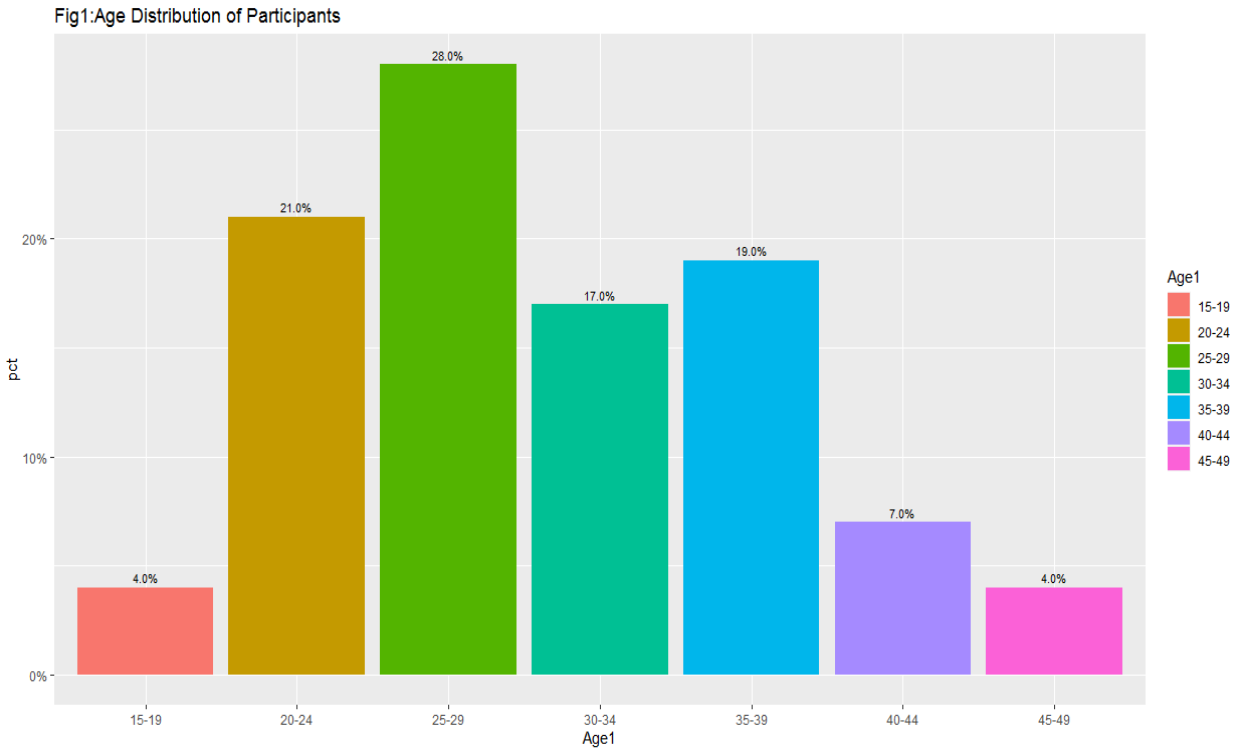

Fig1: Age distribution of participants

When examining the age of the participants, the bar graph above shows that that ages 25-29 had the largest number of participants at 28% followed by ages 20-24 at 21% and 35-39 years at 19%. The age categories with the least participants were 15-19 and 44-49 years at 4% each.

Contraception of choice and place of residence

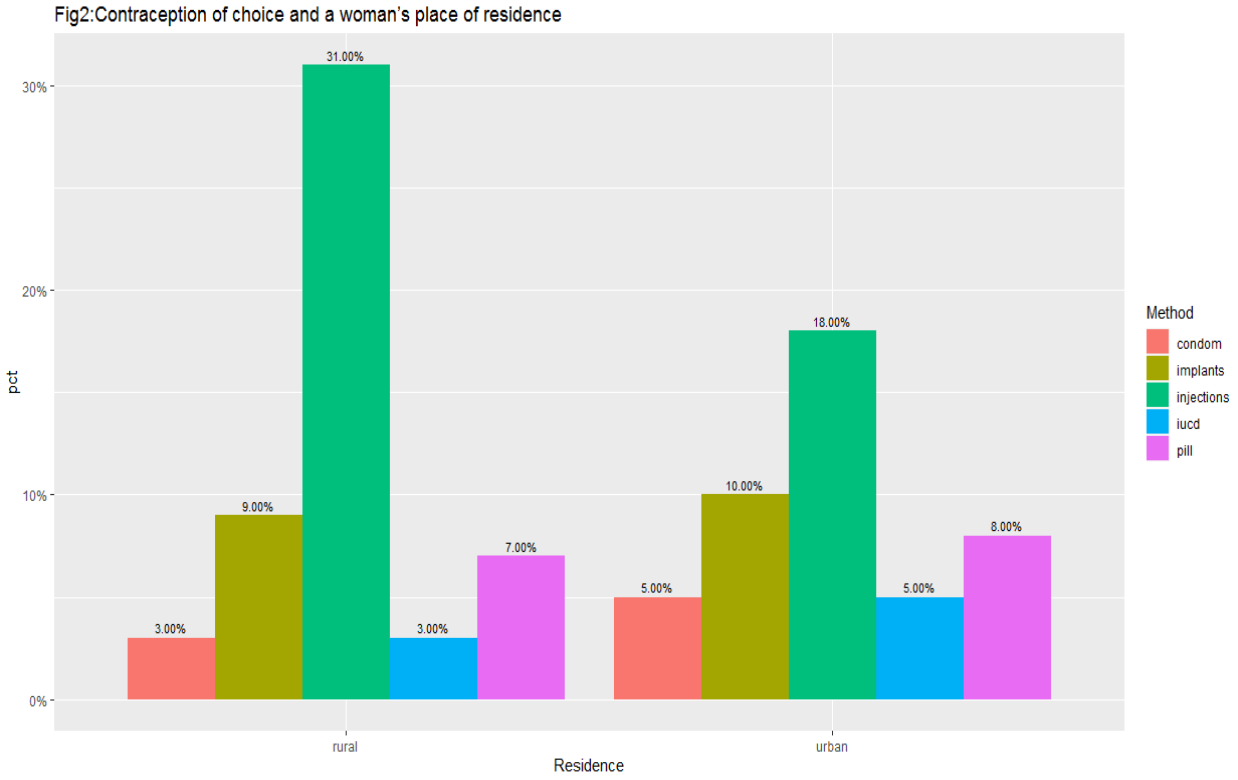

Fig2: Contraceptive use and a woman's place of residence

The bar graph above shows the contraceptive method of choice among women depending on whether they live in rural or urban areas. From the graph, the most prevalent method of contraception is injections both for rural at 31% and urban at 18% respectively. It is also clear from the graph that more women in rural areas use injections than women from urban areas.

When it comes to the use of condoms and pills, there is no big difference between rural and urban women. Fewer women in rural areas used intrauterine contraceptive devices 5% than those from urban areas at 3% while the use of implant was slightly higher among urban women 10% when compared to women from rural areas which stood at 9%.

Contraception of choice and a woman's level of education

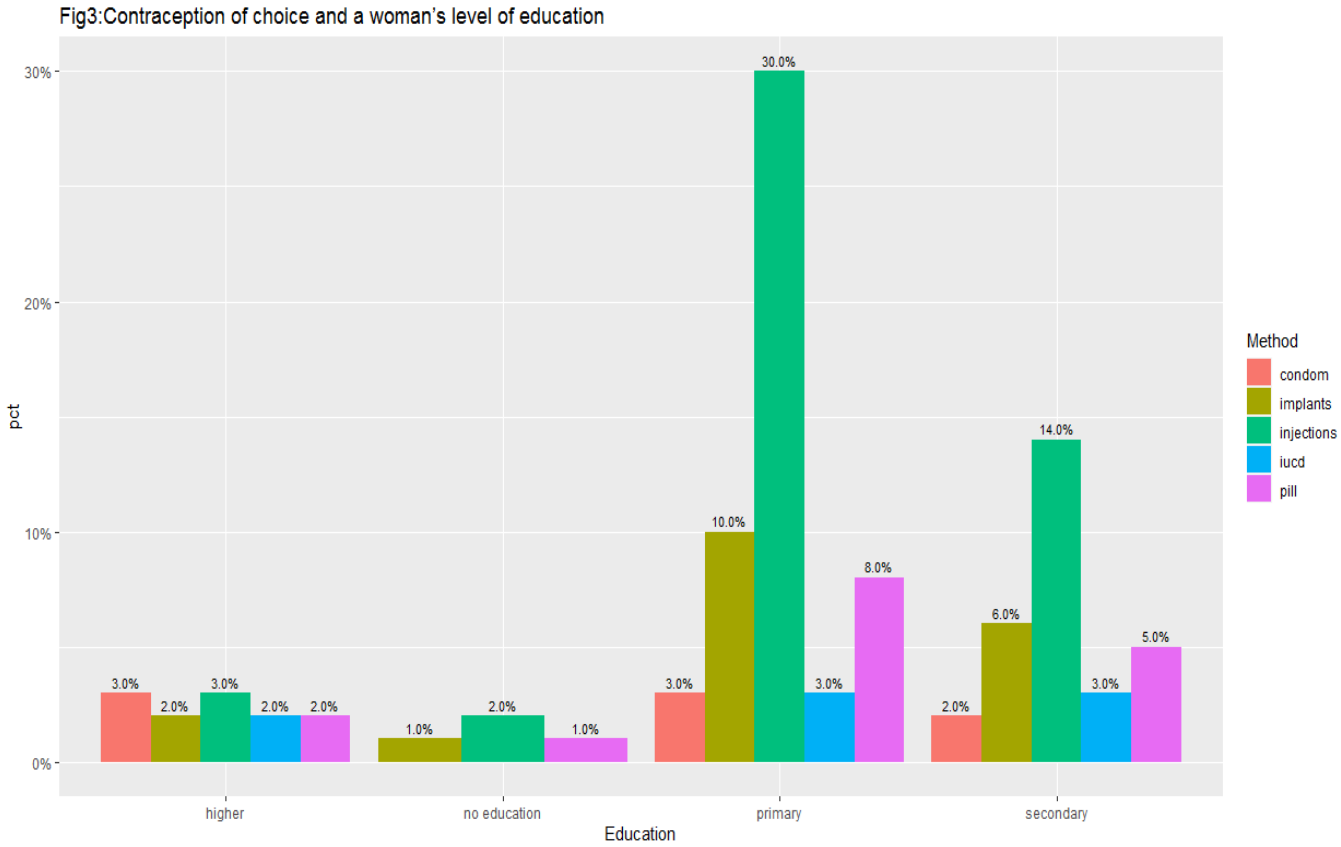

Fig3: Contraceptive method of choice and the level of education of participants

A side by side comparison of the various levels of education among the participants and the contraception method of choice reveals that injections are the method of choice among all the levels of education with highest users being women with primary education at 30% followed by those with secondary education at 14%. Another revelation is that women with primary education are the highest users of modern contraceptives followed by those with secondary education. The graph also shows that there is no big difference in the use of intrauterine devices among the education levels.

Contraception of choice and a woman's religious affiliation

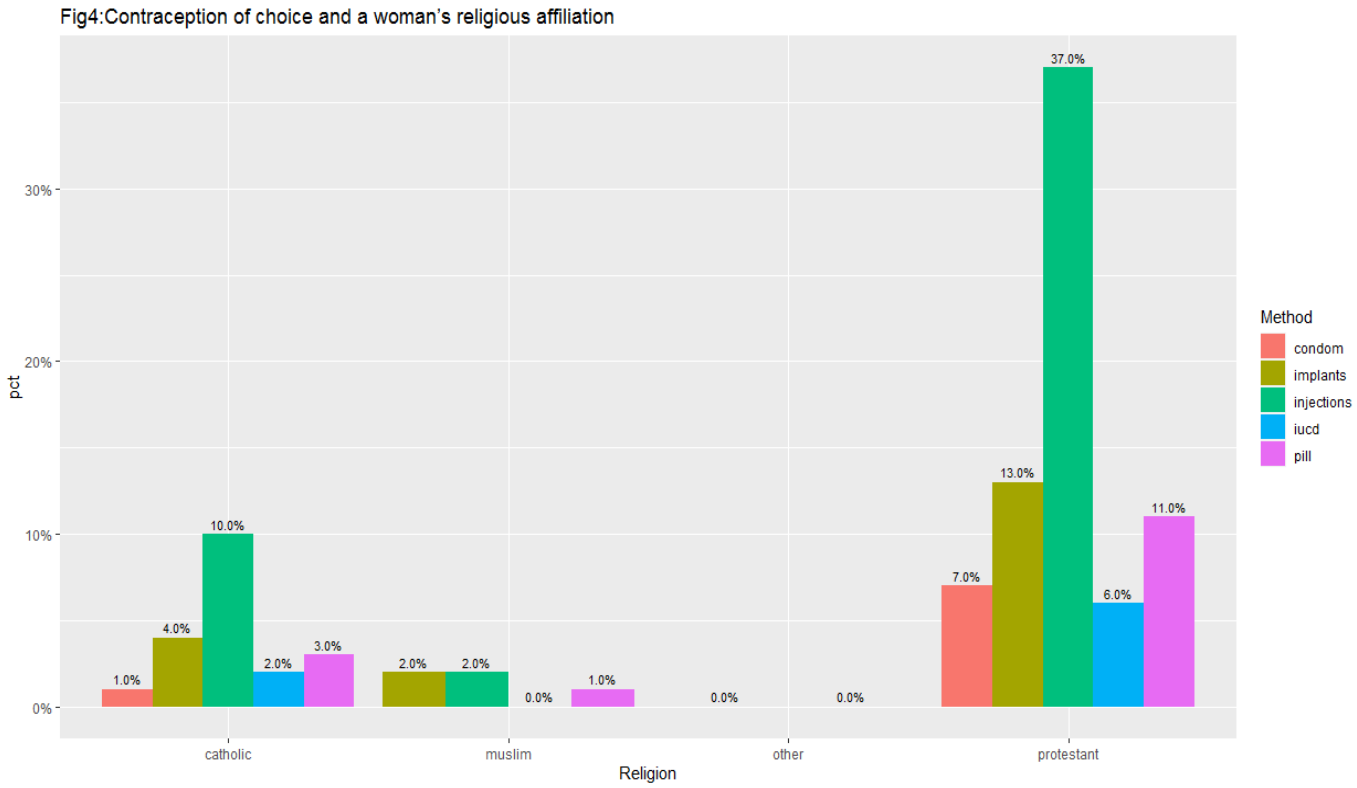

Fig4: Contraceptive method of choice and religious affiliation

The graph above shows the various religious affiliations among participants and their preferred method of modern contraception. It is clear from the plot that the most used method among all the religions except others is the injections where 37% were Protestants, 10% Catholics while use among Muslims stood at 2% followed by implants and then pills respectively. The graph also shows that Muslims are the least consumers of contraception among the participants followed by members of the Catholic Church, with the highest consumers being Protestants. Others being unspecified have not been given much attention.

Contraception of choice and socio-economic status

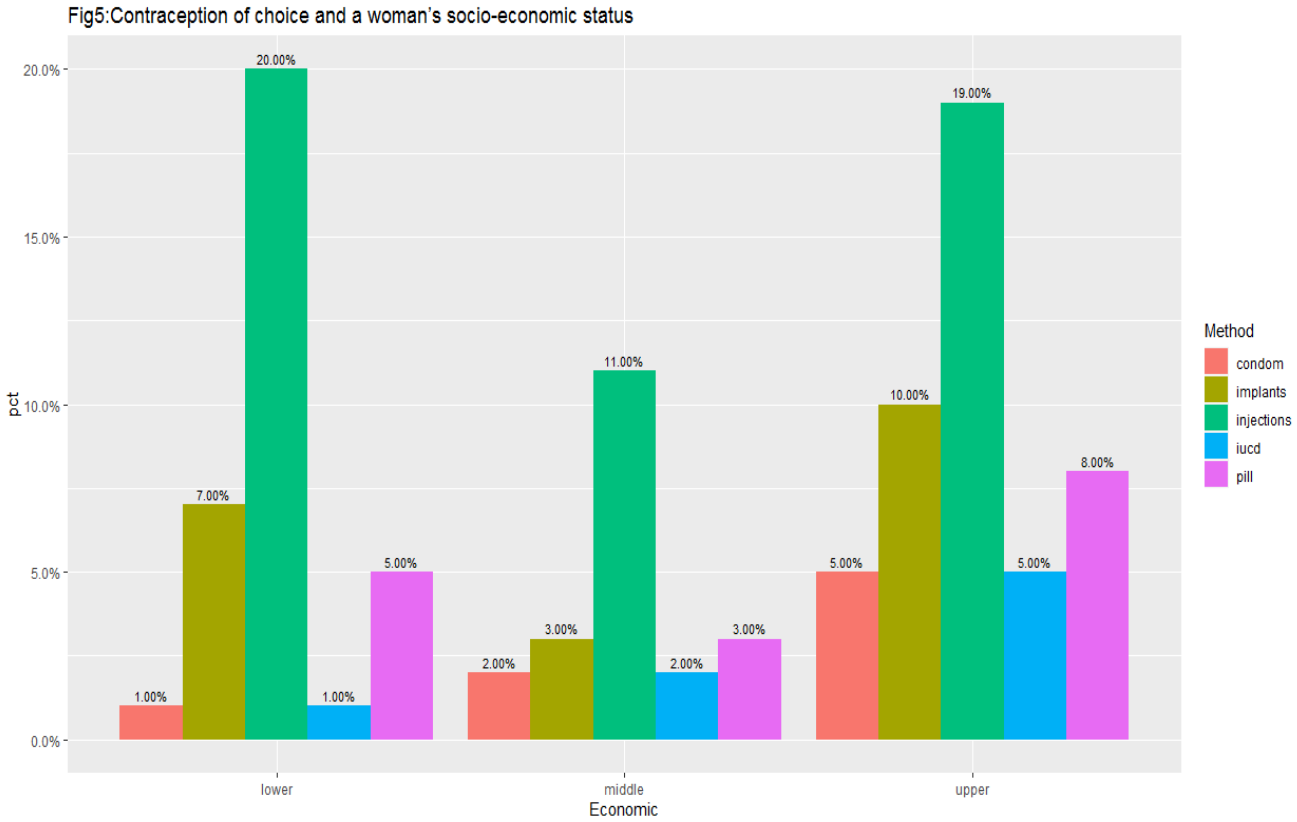

Fig5: Modern contraception of choice and socioeconomic status

On socio-economic status, injections remain the most used contraception method across all the social classes with the highest users of the method being those from the lower class at 20%, followed by those from the upper class at 19% and middle class at 11%. The second most used method is the implant method across all the social classes at 10%, 7% and 3% for upper class, lower class and middle class respectively. The least used method is the intrauterine devices and it cuts across all the social classes. Pills are the third most common method followed by condoms and this applies to all the classes.

When it comes to long term methods i.e. intrauterine devices and implants, the highest users are members of the upper social class followed by middle class and least by those from lower social class.

Part B: Multinomial Logistic Regression coefficient estimates

Table6: Multinomial logistic regression coefficient estimates

		Coefficient estimates of predictors						
Method	Intercept	Age	Urban Residence	Primary Education	Secondary Education	Higher Education	Middle Class	Upper Class
PILLS	-4.343	0.116	0.176	-0.066	-0.550	0.509	-0.456	0.417
INJECTIONS	0.818	0.034	-0.097	-1.011	0.457	0.683	0.149	-0.242
IMPLANTS	-2.235	0.083	0.205	-0.662	0.114	0.461	-0.132	0.251
IUCDs	-0.629	0.044	0.146	-0.476	0.563	0.641	0.092	-0.121

ln[pr(Pill)/pr(condom)] = -4.343 + 0.116Age + 0.176Urban - 0.066Primary - 0.550Secondary + 0.509Higher -0.456Middle class + 0.417upper class

ln[pr(Injections)/pr(condom)] = 0.818 + 0.034Age – 0.097Urban – 1.011Primary + 0.457Secondary + 0.683Upper + 0.149Middle Class – 0.242Upper Class

ln[pr(Implants)/pr(condom)] = -2.235 + 0.083Age + 0.205Urban – 0.662Primary + 0.114Seconday + 0.461Higher – 0.132Middle Class + 0.251Upper Class

ln[pr(IUCDs)/pr(condom)]= -0.629 + 0.044Age + 0.146Urban – 0.476Primary + 0.563Secondary + 0.641Higher + 0.092Middle Class – 0.121Upper Class

Table7: Odds ratios for multinomial logistic regression

		Odds Ratios of Predictors						
Method	Intercept	Age	Urban Residence	Primary Education	Secondary Education	Higher Education	Middle Class	Upper Class
PILLS	0.013	1.123	1.193	0.936	0.577	1.664	0.634	1.517
INJECTIONS	2.265	1.035	0.908	0.364	1.580	1.980	1.161	0.785
IMPLANTS	0.107	1.087	1.227	0.516	1.121	1.586	0.876	1.285
IUCDs	0.533	1.045	1.157	0.621	1.756	1.898	1.096	0.866

Interpretation of the odds ratios

1. **Use of pills**

If all the other factors were held constant, a unit increase in age among the women increases the chance of using pills by 12.3% as opposed to using condoms. When considering the place of residence while holding all the other factors constant, women who live in urban areas are 19.3% more likely to use pills compared to women who live in rural areas as opposed to using condoms.

Education

Holding all the other factors constant;

Women with a primary school education are 6.45% less likely to use pills when compared to women with no education as opposed to using condoms. Those with a secondary level education are 42.3% less likely to use pills as compared to women with no education as opposed to using condoms. Besides, women with higher education are 66.4% more likely to use pills as compared to women with no education as opposed to using condoms.

Socio-economic status

Holding all the other factors constant;

Given that a woman comes from the middle socioeconomic status, she is 36.6% less likely to use pills compared with a woman from the lower socio-economic class as opposed to using condoms. A woman from the upper class is 51.7% more likely to use pills compared to a woman from the lower socio-economic class as opposed to the use of condoms.

2. **Use of injections**

If all the other factors were held constant, a unit increase in age among the women increases the chance of using injection by 3.5% as opposed to using condoms. When considering the place of residence while holding all the other factors constant, women who live in urban areas are 9.2% less likely to use injection compared to women who live in rural areas as opposed to using condoms.

Education

Holding all the other factors constant;

Women with a primary school education are 63.5% less likely to use injections when compared to women with no education as opposed to using condoms. Those with a secondary level education are 58% more likely to use injections as compared to women with no education as opposed to using condoms. Also, women with higher education are 98% more likely to use injections as compared to women with no education as opposed to using condoms.

Socio-economic status

Holding all the other factors constant;

Given that a woman comes from the middle socioeconomic status, she is 16.1% more likely to use injections compared with a woman from the lower socio-economic class as opposed to using condoms. A woman from the upper class is 21.5% less likely to use injections compared to a woman from the lower socio-economic class as opposed to using condoms.

3. Use of implants

If all the other factors were held constant, a unit increase in age among the women increases the chance of using implants by 8.7% as opposed to using condoms. When considering the place of residence while holding all the other factors constant, women who live in urban areas are 22.7% more likely to use implants compared to women who live in rural areas as opposed to using condoms.

Education

Holding all the other factors constant;

Women with a primary school education are 48.4% less likely to use implants when compared to women with no education as opposed to using condoms while women with a secondary level education are 12.1% more likely to use implants compared to women with no education as opposed to using condoms. Besides, women with higher education are 58.6% more likely to use implants as compared to women with no education as opposed to using condoms.

Socio-economic status

Holding all the other factors constant;

Given that a woman comes from the middle socioeconomic status, she is 12.4% less likely to use implants compared with a woman from the lower socio-economic class as opposed to using condoms. A woman from the upper class is 28.5% more likely to use implants compared to a woman from the lower socio-economic class as opposed to using condoms.

4. **Use of IUCDs**

If all the other factors were held constant, a unit increase in age among the women increases the chance of using IUCDs by 4.5% as opposed to using condoms. When considering the place of residence while holding all the other factors constant, women who live in urban areas are 15.7% more likely to use IUCDs compared to women who live in rural areas as opposed to using condoms.

Education

Holding all the other factors constant;

Women with a primary school education are 37.9% less likely to use IUCDs when compared to women with no education as opposed to using condoms. Women with a secondary level education are 76.5% more likely to use IUCDs as compared to women with no education as opposed to using condoms. Women with higher education are 89.8% more likely to use IUCDs as compared to women with no education as opposed to using condoms.

Socio-economic status

Holding all the other factors constant;

Given that a woman comes from the middle socioeconomic status, she is 9.6% more likely to use IUCDs compared with a woman from the lower socio-economic class as opposed to using condoms. A woman from the upper class is 13.4% less likely to use IUCDs compared to a woman from the lower socio-economic class as opposed to the use of condoms.

Confidence intervals for the odds ratios

Table8: 95% confidence intervals for the odds ratios

			Education			**Economic Class**	
Method	Age	Urban residence	Primary	Secondary	Higher	Middle	Upper
	2.5%,97.5%	2.5%,97.5%	2.5%,97.5%	2.5%,97.5%	2.5%,97.5%	2.5%,97.5%	2.5%,97.5%
Pill	(1.106,1.140)	0.941,1.512	0.695,1.260	0.237,1.408	1.282,2.160	0.442,0.910	1.117,2.060
Injections	1.023,1.047	0.766,1.077	0.290,0.455	0.982,2.542	1.650,2.375	0.925,1.456	0.633,0.972
Implants	1.073,1.101	1.009,1.492	0.399,0.668	0.636,1.973	1.285,1.958	0.668,1.149	1.002,1.649
IUCDs	1.032,1.058	0.960,1.394	0.485,0.795	1.052,2.930	1.551,2.322	0.856,1.404	0.684,1.097

From the table of confidence intervals, it is clear that age is statistically significant when it comes to a woman's choice of family planning method. This is because all the confidence intervals under age do not include one and therefore suggests that at all time, the choices that women make when it comes to contraception methods are different at all ages.

Under place of residence, we see that as much as the variable is significantly associated with the choice of contraception method under chi-square test, it is clear from the confidence intervals that there are methods that do not differ significantly when it comes to the place of residence. These methods are IUCDs, injections and pills. The inclusion of one in the confidence intervals proofs that there is no statistically significant difference in the use of these methods when it comes to the place of residence. On the other hand, the difference in the use of implants is statistically significant between rural and urban areas.

When it comes to education, the use of pills is no statistically significant among women with primary education and those with no education while the other three methods are significantly different. On secondary school leavers, there is no statistically significant difference in choice of a method when compared with those who don't have an education except in the use of IUCDs where more women with a secondary education prefer the method than those with no education. Women with higher education do not match at any given point with those who do not have an

education. The odds ratios show that with the use of all the methods, there is a statistically significant difference in the method of choice.

Socio-economic status is also important in determining contraceptive use among women, members of the middle class show a statistically significant difference in the use of pills and condoms from their lower-class counterparts. Statistically, there is no significant difference in the use of injections, implants and IUCDs when compared to condoms between middle-class women and those from the lower class. When comparing upper-class women and lower class, a statistically significant difference exists when it comes to using condoms on one hand and the use of pills, injections and implants on the other hand. No significant difference exists statistically between the use of IUCDs and condoms when it comes to upper-class women and those from the lower class.

5.0 Chapter Five: Discussion, Conclusion and Recommendation

5.1 Discussion

Objective 1

The results of this study indicate that all the socio-demographic factors except age are significant statistically in terms of association with the choice of modern contraception as the Pearson's chi-square tests for the association have p-values less than 0.05 except that of age in categories. The relationship in these variables can be of great importance when it comes to both public messaging on contraception and also during procurement of contraceptive methods.

The above results are in agreement with Ali et al (2004) who found that sociodemographic factors had a significant association with family planning use while studying prevalence and factors associated with the practice of modern contraceptives among married women in Bangladesh.

To maximize family planning consumption, governments can leverage on socio-demographic factors when it comes to the provision of these services. The associations in this context indicate that women from the various social groups do not use contraceptives the same way. How then can the contraceptive needs of women be met in a diverse society? The answer is simple; individualize the supply and provision of modern contraceptives by taking into account the socio-demographic factors. The above approach is key in meeting Kenya's updated family planning commitment set on July 11th 2017 in a family planning summit in London to increase family planning prevalence rate from 61% to 66% by the year 2030 (Family Planning2020, 2017).

Objective 2

Age of a woman and contraception of choice

This second objective looks at each socio-demographic factor and how it affects a woman's choice of a modern family planning method. Despite age not being significant as a categorical variable, in its continuous form, age has a slight influence when regressed with the contraceptive method of choice. In other words, age contributes to modern contraceptive choice to some extent. From this study, as a woman's age increases, they tend to use pills, injections, implants and IUCDs as opposed to using condoms. If Kenya as a country was to achieve its updated target

of family planning of 66% by 2030, it would be expected that contraceptives are supplied depending on the age of a woman as seen from the results in this study.

Place of residence and contraception of choice

The place of residence is also another important socio-demographic factor to be addressed by this study. The analysis shows that there is a clear distinction in the choice of contraception between urban and rural women. It is evident in this study that urban women are use pills, implants and IUCDs more than rural women when compared to the use of condoms while more rural women use injections more than urban women as opposed to using condoms.

Level of education and contraception of choice

The level of education is another factor that this study has established to be significantly associated with the choice of contraception and this is how the various levels vary on each method; on use of pills, women with primary and secondary education have a higher tendency to use condoms when compared to those with no education who in this case prefer to use pills while those with higher education have higher chances of using pills as opposed to using condoms when compared to those with no education. When it comes to using injections, women with no education tend to use injections more than condoms when compared to those with primary education. On the other hand, this study has found out that more women with secondary and higher education use injections more than condoms when compared to those with no education.

Another method of interest is the use of implants, from this study the results have shown that there is a disparity in the use of this method when the different levels of education are taken into account. When the four levels of education are looked at, the data shows that more women with a primary education prefer using condoms than implants when they are compared to those with no education. On the other hand, those who have secondary education and higher prefer to use implants as opposed to condoms when we compare them to those with no education.

On the use of IUCDs, women with a primary education prefer using condoms as opposed to the use of IUCDs when compared to those with no education. In other words, fewer women with primary education would prefer to use IUCDs as opposed to the use of condoms. In contrast, the women who have a secondary education and higher prefer to use IUCDs than condoms when compared to those with no education.

Socio-economic status and contraceptive method of choice

When it comes to the use of pills, more women from the lower class are likely to use pills as opposed to using condoms compared to women from middle class while those from upper class will prefer to use pills as opposed to the use of condoms. Under injections method, when compared to lower-class women, those from middle class prefer to use injections as opposed to those from lower-class while those from the upper class prefers the use of condoms as opposed to injections.

On the long term method of implants, fewer women from the middle class would prefer to use implants as opposed to condoms when compared to those from lower-class while those from the upper-class use implants as opposed to using of condoms. When it comes to the use of IUCDs, middle-class women prefer to use IUCDs as opposed to condoms when compared to a woman from the lower social status while those from the upper class would prefer to use condoms as opposed to using IUCDs when compared to those from lower social class.

5.2 Conclusion

This study has established that socio-demographic factors affect the choice of family planning among women. The methods used by women from different spheres of life differ in terms of education levels, religious affiliations and even the place of residence. However, there is no clear trend in the use of various methods of family planning. There are wide variations say for example on the different levels of education, it would be expected theoretically that women with a primary school education are likely to use long term methods more than those with no education. A case in point in this study is where women with primary school education prefer 37.8% of the time to use condoms as opposed to using IUCDs compared to those with no education.

From this study, I can also conclude that women with secondary and higher education are more likely to use long term methods. This also applies as you climb the social classes.

5.3 Limitations of this study

The utilization of secondary data in this study may not give a clear picture as the sample used here was sampled from another sample. This might have deviated the representativeness from the original sample by KDHS. Also given that KDHS data had a sample size of more than 40,000 participants, the sample of 375 utilized here may be sufficient but lack external validity.

5.4 Recommendations

From the results of the analyzed data, this study recommends that family planning services be tailor-made to suit the various socio-demographics in society. In a given setup, service providers should be very keen on socio-demographic factors to ensure that there are no shortages for the desired contraceptive methods. On the other hand, governments and other service providers must encourage the use of methods that will not only increase family planning uptake but also achieve the desired goals of population control and sustainable communities.

This study has shown to some extent that women with lower levels of education and come from lower social classes are more likely to utilize short term methods of family planning. It is therefore advisable that service providers and other stakeholders encourage the use of long term methods among these groups that tend to be highly reproductive and without resources. This can be done through targeted messages and an individual kind of approach to get these women to subscribe to long term methods.

References

1. Ali, S., Rozi, S., Mahmood, M. A. (2004). Prevalence and factors associated with the practice of modern contraceptive methods among currently married women in District Naushahro Feroze. *Journal of Pakistan Medical Association, 54*(9), 461-465. https://ecommons.aku.edu/pakistan_fhs_mc_chs_chs/544/
2. Alyahya, M. et al (2019) do modern family planning methods impact women's quality of life? Jordanian women's perspective. Health and Quality of Life Outcomes. https://hqlo.biomedcentral.com/articles/10.1186/s12955-019-1226-6.
3. Curtis, L. and Magadi, C. (2004) Trends and Determinants of Contraceptive Method Choice in Kenya. Studies in Family Planning. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1728-4465.2003.00149.x
4. Dr. AKPA, M. and Ikpotokin, O. (2012) Modeling the Determinants of Fertility among Women of Childbearing Age in Nigeria: Analysis Using Generalized Linear Modeling Approach. International Journal of Humanities and Social Science.
5. Family Planning 2020. Kenyan contraceptive prevalence. http://www.familyplanning2020.org/kenya.
6. Family Planning2020 (2017) Increased modern contraceptive prevalence rate (mCPR) from 61% to 66% by the year 2030. Family Planning2020 Commitment. https://www.familyplanning2020.org/sites/default/files/Kenya_FP2020_Commitment_2017_1.pdf
7. Fengler W. (2010) Demographic Transition and Growth in Kenya. The World Bank.
8. Frost, J. and Darroch, E. (2004) Factors associated with contraceptive choice and inconsistent method use, United States, 2004. Perspective on Sexual and Reproductive Health. https://www.guttmacher.org/journals/psrh/2008/factors-associated-contraceptive-choice-and-inconsistent-method-use-united.
9. Godfrey, M. Chin, N., Fielding, S., Fiscella, K. and Dozier, A. (2011) Contraceptive methods and use by women aged 35 and over: A qualitative study of perspectives. BMC Women's Health. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3050835/
10. Jalong'o, R., Thuita, F. Barasa, O. and Njoroge, P. (2017) Determinants of contraceptive use among postpartum women in a county hospital in rural KENYA. BMC Public Health. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-017-4510-6.
11. Kahraman, K. et al (2012) Factors influencing the contraceptive method choice: a university hospital experience. Journal of the German-Turkish Gynecological Association. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3939130/
12. Kamal, M. and Islam, A. (2010) Contraceptive Use: Socioeconomic Correlates and Method Choices in Rural Bangladesh. Asia Pacific Journal of Public Health. https://journals.sagepub.com/doi/abs/10.1177/1010539510370780?casa_token=vjw9_otlXNUAAAAA%3A9aehByzuGbwULTLISyLeMdrschTeeP_cLZggT-Lyz_gVDYYxidb08yhUYHfeB6DCFqMbwrUJg6cVo_E&
13. Kenya National Bureau of Statistics (2014). Demographic and Health Survey 2014. https://microdata.worldbank.org/index.php/catalog/2544#metadata-sampling.

14. Kenya National Bureau of Statistics (2019). 2019 Kenya Population and Housing Census Results. https://www.knbs.or.ke/?p=5621.
15. Kenya population Datasheet, 2011. *https://www.prb.org/kenya-population-data-sheet-2011/*
16. Larson, C. and Stamfors, M. (2014) Women's Education, Empowerment, and Contraceptive Use in sub-Saharan Africa: Findings from Recent Demographic and Health Surveys. African Population Studies Vol 28 no 2 Supplement July 2014. http://www.bioline.org.br/pdf?ep14047.
17. **Ligami, C. (March 2018) Kenya on the verge of meeting family planning target. The East African. *https://www.theeastafrican.co.ke/scienceandhealth/Kenya-on-the-verge-of-meeting-family-planning-target-/3073694-4331796-mnu9pp/index.html***
18. Ministry of Health Kenya (2019) Kenya contraceptive prevalence increase. Nairobi (KENYA) October 3, 2019. http://www.health.go.ke/kenya-contraceptive-prevalence-increase-nairobi-kenya-october-3-2019/
19. Naing, L., Winn, T., and Rusli, N. (2006). Practical Issues in Calculating the Sample Size for Prevalence Studies https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.504.2129&rep=rep1&type=pdf
20. Nderitu, M., Anyango, R., Ombech, E., Mwita, C. and Gwer, S. (2017) Family Planning Services in Kenya during a Transition: Utilization Trends across Counties.
21. Nkonge, C. (2014), Assessment of hormonal contraceptive use among women at KNH. http://erepository.uonbi.ac.ke/handle/11295/75832?show=full.
22. Obwoya, G., Wulifan, K. and Kalolo, A. (2018) Factors influencing contraceptive use among women in the Juba city of South Sudan. International Journal of Population Research. https://www.hindawi.com/journals/ijpr/2018/6381842/.
23. Ochako, R., Izugbara, C., Okal, J., Askew, I., and Temmerman, M. (2016) Contraceptive method choice among women in the slum and non-slum communities in Nairobi, Kenya. BMC Women's Health.
24. ODPHP (2020) Family Planning.https://www.healthypeople.gov/2020/topics-objectives/topic/family-planning
25. Oketch, C., Wawire, N. and Mburu, T. (2011) Contraceptive Use among Women of Reproductive Age in Kenya's City Slums. United States International University-Africa's Digital Repository. http://usiuservicedesk.usiu.ac.ke/handle/11732/411
26. Simpskins, P. (1988) Contraception by age group. PubMed.gov. https://www.ncbi.nlm.nih.gov/pubmed/3217318.
27. Sundararajan, R., Yoder, L.M., Kihunrwa, A. *et al.* How gender and religion impact uptake of family planning: results from a qualitative study in Northwestern Tanzania. *BMC Women's Health* **19,** 99 (2019). https://doi.org/10.1186/s12905-019-0802-6
28. The World Bank (2019), Population total. https://data.worldbank.org/indicator/SP.POP.TOTL

29. Tigabu, S., Demelew, T., Seid, A. *et al.* Socioeconomic and religious differentials in contraceptive uptake in western Ethiopia: a mixed-methods phenomenological study. *BMC Women's Health* **18,** 85 (2018). https://doi.org/10.1186/s12905-018-0580-6
30. UN (2019) Contraceptive Use by Method 2019. Department of Economics and Social Affairs.https://www.un.org/en/development/desa/population/publications/pdf/family/ContraceptiveUseByMethodDataBooklet2019.pdf
31. UNFPA (2019) Family planning. https://www.unfpa.org/family-planning.
32. Vijayasree, L. (2017) A study on the influence of education and occupation on family planning practices in rural Shamirpet, R.R. District, T.S., India. ResearchGate. https://www.researchgate.net/publication/320792744_A_study_on_influence_of_education_and_occupation_on_family_planning_practices_in_rural_Shamirpet_RR_District_TS_India.
33. WHO (2018, Family Planning/Contraception).*https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception.*
34. Yeatman, E. and Trinitapoli, J. (2008). The relationship between religion and family planning in rural Malawi. Demographic Research. https://www.demographic-research.org/volumes/vol19/55/19-55.pdf

APPENDIX1: GANNT CHART

Activities (months)	Feb	March	April	May	June	July	August	September	Oct	Nov	Dec
Proposal development											
Proposal defence											
Ethics review											
Data request											
Data management and analysis											
Report writing											
Defence of the report											

APPENDIX 2: ESTIMATION OF BUDGET IN KENYA SHILLINGS

Item	Quantity	Cost		Total
Printing proposal	**6*30 pages**	**10 per page**	**6*30*10**	**1,800**
Transport				**1,000**
Photocopy papers	**3 Rims**	**500**	**3*500***	**1,500**
KNH/UON Ethics Review Committee				**2,000**
Printing final report	**6*57 pages**	**10 per page**	**6*10*57**	**3,420**
Binding of thesis	**4 copies**	**450 per copy**	**450*4**	**1,800**
Total				**11,500**

APPENDIX 3: APPROVAL BY UON/KNH ETHICS REVIEW COMMITTEE

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/329

23rd September 2020

Joshua Atunga
Reg. No.W62/10965/2018
Institute of Infectious and Tropical Diseases (UNITID)
College of Health Sciences
University of Nairobi

KENYATTA NATIONAL HOSPITAL APPROVED 23 SEP 2020 KNH/UoN-ERC P. O. BOX 20723 - 00202 NAIROBI

Dear Joshua

RESEARCH PROPOSAL – MODELING SOCIO-DEMOGRAPHIC FACTORS AS COVARIATES FOR OPTION OF MODERN FAMILY PLANNING METHOD AMONG WOMEN OF REPRODUCTIVE AGE 15-49 YEARS - A Multinomial Logistic Regression Approach (P373/07/2020)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 23rd September 2020 – 22nd September 2021.

This approval is subject to compliance with the following requirements:

a. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
c. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e. Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
f. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
g. Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

For more details consult the KNH- UoN ERC website**http://www.erc.uonbi.ac.ke**

Yours sincerely,

PROF. M. L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
The Senior Director, CS, KNH
The Chairperson, KNH- UoN ERC
The Assistant Director, Health Information, KNH
The Director, Institute of Tropical and Infectious Diseases (UNITID), UoN
Supervisors: Dr. Samuel Kimani, School of Nursing Sciences, UoN
Dr.Anthony Karanjah, Faculty of Science and Technology, Multimedia University of Kenya