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FACTORS INFLUENCING USE OF MODERN CONTRACEPTIVES AMONG KENYAN-
SOMALI WOMEN AGED BETWEEN 15-49 YEARS
A MATCHED CONTROL-CASE STUDY OF KOROGOCHO AND KIAMAIKO

2016.

Declaration

THIS RESEARCH PROJECT IS MY ORIGINAL WORK AND HAS NOT BEEN
PRESENTED FOR A DEGREE IN ANY OTHER UNIVERSITY.

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Signature

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THIS THESIS HAS BEEN SUBMITTED FOR EXAMINATION WITH MY APPROVAL AS
UNIVERSITY SUPERVISOR

DR. NDERITU

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Signature

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Date

DEDICATION

This work is dedicated to my Fiancée Aisha Mohammed, my entire family and Ujamaa Africa.

You have been a great inspiration in my life.

ACKNOWLEDGEMENTS

I am greatly indebted to my supervisor Dr. Nderitu for his invaluable help and critical review on my work making me achieve my academics goal through his mentorship, guidance and vast academic knowledge without him I would never have completed this work. I am also grateful to Benjamin and Jake for their support. I thank my family for the love and prayers throughout this program. Finally, thank Allah (subhana wata'ala) for the good health, life and guidance.

ABSTRACT

Contraceptive use allows for the deliberate spacing and timing of births. 289,000 women die annually from complications during pregnancy and childbirth, almost all in developing countries. In Kenya, CPR is 58% while that of Kenyan Somali women is at 1.2%. Little is known on the Determinants of modern contraceptives use in Korogocho and Kiamaiko. This study assessed determinants of modern contraceptive practice among, WRA at Korogocho and Kiamaiko. Specific objectives are to determine socio-demographic, identify socio-economic, and determine cultural factors that affect modern contraception. Matched, case-control study design was used. A cohort of 132 women of reproductive age (15-49) were determined using Keish and Leslie (1965) formula. The Subjects were stratified by age into 7 strata's and sample was allocated to each stratum by proportional allocation method. Subjects included in the study were picked by simple random sampling. Subjects were distributed to three groups in the (ratio 1:1:1), 22 cases, 22 control group-1, 22 control group-2. The cases and the controls were selected using simple random sampling. Quantitative data were collected by use of questionnaire interviews. SPSS IBM 20, Microsoft Excel and R statistical analysis package were used to analyze the data. Descriptive analysis was used to summarize the data. Conditional logistic regression was fitted to the data with two or more independent variable to conditional logistic regression to establish the relationship between socio-cultural factors, socio-economic factors, contraceptive knowledge and the use of modern contraceptives. McNemar's test at 5% level of significance was used to determine factors that significantly contributes to the use/non- use of contraceptives. Understanding the determinants of modern contraceptive was critical to establishing programs that will help to increase modern contraceptive use among Kenyan Somali women in Korogocho and Kiamaiko, consequently, improving the quality of maternal and child health.

Acronyms

WRA-women in reproductive age group

FP- family planning

CPR-contraceptive prevalence rate

KDHS-Kenya Demographic and Health survey

TFR-Total Fertility Rate

JAM-Joined Assessment Mission

MOH-ministry of health

UNHCR-united nation human commission of refugees

STI's-sexually transmitted infections

HIV-Human immunodeficiency virus

WHO-World health Organization

MDG's-millennium development goals

WFP-World food programme

UDHR-Universal Declaration of human rights.

COC-Combined oral contraceptives

SENS-Standardized expanded Nutritional survey

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CHAPTER 1: INTRODUCTION

1.1 Background of the study

Access to family planning (FP) is critical to women and children's health globally (WHO 2009 Routledge; 2013). 289,000 women die annually from complications during pregnancy and childbirth, almost all in developing countries. However, if members of this population who do not wish to become pregnant access and use effective contraception, 1 in 3 of those deaths can be prevented (UDHR 2012)

Globally fertility rate is 2.5 children per woman. Africa remains the region with the highest fertility at 4.7 children per woman. World fertility pattern (WFP 2015). In Kenya the total fertility rate is 3.9 births per woman, meaning that a Kenyan woman who is at the beginning of her childbearing years will give birth to about four children by the end of her reproductive period if fertility levels remain (KDHS 2014). While the Somali women living in Nairobi Kenya fertility rate is estimated to be between 5.7 and 6.7 irrespective of geographical location (UNHCR, Nairobi 2010). The (WHO) survey 2006 estimated a CPR at 1.2% while the (Ibid) estimated it at 1%. This low CPR and high fertility rate for the Kenyan Somali women elevates the risk of child morbidity and mortality. It also denies the women a chance to develop or further their education. Moreover, the children stand a limited chance of access to a quality life and better schooling. The Kenyan Somali women living in Korogocho and Kiamaiko have average of 5 to 6 children poorly spaced. This is a direct indication of relatively high fertility rate and a precursor of low contraceptive prevalence which the study intends to investigate.

Close child spacing are related to increase maternal and childhood morbidity and mortality (WHO.1998) it's estimated that Women at pregnancy orders five and six suffer roughly 50 percent higher mortality (Chen et al. 1974; DaVanzo et al. 2004). When children spacing is close

it leads to premature weaning hence serious malnutrition, the global malnutrition rate of 8.04% (DDB, SENS 2015). A birth-to-pregnancy interval of 6 months or shorter is associated with high risk of maternal mortality and still births while the birth-to-pregnancy interval of 18 Months or shorter is associated with elevated risk of infants, neonatal and perinatal mortality. (DaVanzo et al.2007). Abortion complication rate of 57.1/1000/month (UNHCR HIS 2015) also high indicates unmet need of contraception. Scaling up access of safe and effective contraceptives can reduce unwanted pregnancies, unsafe abortion and resulting maternal death and disability. One third of the total maternal deaths can be attributed to non-use or lack of availability of contraception (Cleland *et al*, 2006). The use of contraceptives still receives cultural, religious and specific individual's critics among the Somali communities. These have since lead to uncontrolled birth and poor maternal and child health. Having deeper understanding of the factors that influence contraceptive use is critical to the efforts of programs to increasing the contraceptive prevalence amongst the Kenyan Somali women of reproductive age.

This study seeks to investigate the factors which significantly contribute to the use or non-use of modern birth control methods.

1.2 Statement of the problem

Clearly, Low CPR and high FTR among the Kenyan Somali women translates to close child spacing which is related to increase in maternal and childhood morbidity and mortality (WHO 1998). The total fertility rate of 6 children per the Somali women, irrespective of geographical location, has increased the risk of women morbidity and mortality. Some studies have shown that Birth-to-pregnancy interval of 6 months or shorter is associated with high risk of maternal mortality and still births, while Birth-to-pregnancy of 18 months or shorter is associated with elevated risk of infants, neonatal and perinatal mortality. (DaVanzo et-al, 2007), but still women

do not practice the modern contraception. Despite availability of free Family planning services and efforts to reach women with information on the available family planning methods, contraceptive prevalence rate is still low at 1.2% among the Somali community. Also high birth rate (1331/1000/month) (UNHCR, HIS 2015) could be contributing towards high population growth. A standard of living tends to worsen when the rate at which population grow exceeds the rate of economic growth (Feyisetan and Bamiwuye, 1998). At the household level, the high fertility rate may be contributing towards rising cost of living, ill health, poor nutrition and limited educational opportunities to the dependents. Nevertheless, the high crime rate at the two slums, Korogocho and Kiamaiiko may be directly attributed to high population of unemployed youth consequent to uncontrolled birth over several years in this community. The largest population in these two areas is that of youth who barely completed school. Given the harsh environment and economic hardship, most of the youth engage in theft and robbery. Some of this youth are less than 18 years of age hence demonstrate that the uncontrolled birth is directly related to this elevated crime.

1.3 Objective of the study

Overall objective

The study seeks to assess the factors influencing modern contraceptive use among Kenyan Somali women of reproductive age living in Korogocho and Kiamaiiko unplanned settlements.

Specific Objectives

1. To determine socio-economic and socio-cultural factors that influence modern contraceptive use among Kenyan Somali women of reproductive age living in Korogocho and Kiamaiiko unplanned settlements

2. To assess level of knowledge on contraceptives among Kenyan Somali women of reproductive age living in Korogocho and Kiamaiko unplanned settlements
3. To determine whether spouses are major-decision makers regarding contraceptive use by the Kenyan Somali women of reproductive age living in Korogocho and Kiamaiko unplanned settlements

1.4 Research Questions

The research will explore the following questions

1. What are the socio-economic and socio-cultural factors influencing modern contraceptive use?
2. What is the level of knowledge of modern contraceptives among women of reproductive age?
3. Are the spouse major-decision makers regarding contraceptive use amongst the Kenyan Somali women of reproductive age at Korogocho and Kiamaiko?

1.5 Significant output

The study will help to understand the inherent factors which significantly influence modern contraceptive use among the Kenyan Somali women of reproductive age. Building a deep understanding of these factors, will help to isolate and classify those factors which may have been misconstrued due to religious assertions and Quran interpretations by different Muslim scholars. The study will establish the level of knowledge on the different available contraceptives methods and thereby, create a common understanding on the modern methods directly prohibited and/or supported by the holy Quran.

Establishing the determinants of modern contraceptive at the three levels (Socio economic, Cultural and Knowledge) will help in starting up discussions with the Somali community leaders

on awareness and training on FP in line with the religion and cultural structure of the community. The findings will also be handy in tailoring family planning intervention programs that will be used to guide MOH and other relevant health bodies in setting up plans and strategies relevant to Islamic religion that will enable Kenya Somali women to seek and access FP services.

1.6 Scope of the study

The study was conducted in Korogocho and Kiamaiiko unplanned settlements which are a predominantly occupied by the Kenyan Somali community. The population is almost 100% Muslim and has close family ties. The two areas borders other communities from various Kenyan tribes and are majorly Christians. Although, they live and share a number of resources clear lines along religious and cultural practices are almost obvious.

Limitation

1. The selection criteria of the women using the modern contraceptives could not be verified since the possession of the FP cards was relied on. There was no other means to verify the cards.
2. The spouses were not assessed directly during this study and this could have given more understanding of the underlying phenomenon
3. The data was collected during the month of Ramadan and as such many respondents were more unwilling to discuss much on the assertion of the Quran on the subject under study.

4.

CHAPTER 2: LITERATURE REVIEW

2.1 GLOBAL PICTURE OF FAMILY PLANNING

Globally, the use of modern contraception has risen slightly, from 54% in 1990 to 57.4% in 2014. (WHO, 2015). An estimated 225 million women in developing countries would like to delay or stop childbirth but they are not using any method of contraception. Preventing high-risk pregnancies through increasing the availability of family planning services could also save at least 25% of the women's lives and those of their children currently lost during pregnancy and at childbirth (Cleland *et al*, 2006). Averagely a woman in the world now bears 2.69 (i.e. between 2 and 3) children (Longman, 2004) in her reproductive lifetime. In appreciation of the family planning importance, the WHO adopted a framework 2005-2014 for accelerated action to reposition family planning on national agenda and in the reproductive health services. The outline underscores on increased efforts to promote the recognition of the fundamental role of family planning in achieving health and development objectives at all levels (WHO, 2008). Family planning is crucial in achieving three of the United Nations' Millennium Development Goals namely, reduction in child mortality, improving maternal health, and combating HIV/AIDS, malaria and other diseases (WHO, 2008).

2.2 FAMILY PLANNING IN SUBSHARAN AFRICA

Fertility has declined in most developing countries but remains high in most of sub-Saharan Africa, to an average of 5.2 children per woman in her lifetime (PRB, 2014). The contraceptive prevalence rate in sub-Saharan Africa is estimated at 21.8%, of this only 17 % married women of reproductive age use a modern contraceptive. CPRs for modern methods ranged from 1.2 percent in Somalia to 60.3 percent in South Africa. (World Bank, 2010) A recent review of demographic health survey for countries in sub-Saharan Africa showed the relationship between the low

contraceptive prevalence rates with high unmet need has both led to increased unintended pregnancies and increased maternal, infant and child morbidity and mortality (Foots *et al*, 2009).

2.3 FAMILY PLANNING IN KENYA

Over the last 40 years, Kenya has made good progress in increasing the utilization of contraception among married women. Religion, partner approval, friendly service providers are among the factors found to influence use of contraceptives in the slums, (Oketch, 2011). In 1978, the prevalence the main reason why women used the contraception was either to prevent unwanted pregnancy or STI's while the reason for no use was because of less sexual activities to unmarried women, (Oketch, 2011). of contraceptive use among married women in Kenya was 7% and this progressively increased over the years to 58% in 2014 (KDHS 2014) .There was also an overall decline from the 8.1 births per woman in 1977 to 6.7 in 1998, 4.7 in 1989 and 4.6 in 1998 according to World Fertility survey (WFS, 1977) with a sharp decrease measured between the 1977 to 1978 Kenya Fertility Survey (KFS) and the 1993 KDHS. The decline slowed in the 1990s, but the decrease in TFR from 4.6 in the 2008-2009 KDHS to the current TFR of 3.9 may indicate that Kenya's fertility is returning to the decline observed from the mid-1970s through to the 1990s (KDHS 2014). This is estimated to possibly reach 2.4 children by 2050 (World Bank 2015). This drop is mostly attributed to increased practice of modern contraceptive methods over time, and improved educational status of women. The contraceptive prevalence rate (of all methods) rose sharply since the early 1980s; rising by almost half from 17% in 1984 to 33% in 1993. It then progressively rose gradually to 39% of married women in 1998, 46 % in 2009 and 58% in 2014. Demographic shift began to manifest in 1989, when population growth rate declined to 3.4 % and further to 2.5 % in 1999, but estimated at a higher level of 2.9% in 2009. Owing to the past growth rates, Kenya's population is still youthful with

nearly half being aged 18 years or below. This is a clear demonstration of *demographic momentum*- a phenomenon consequent to continued population increase despite reducing fertility rates, which is brought about by waves of large populations of young person's entering reproductive age in successive years.

Family planning services, in Kenya, is offered by the ministry of medical services and public health, non-Governmental organizations NGO's and private sectors. Public facilities provide contraceptives to more than half (57 %) of modern method users. The government hospitals supplying 25%, government health centers 20% while dispensaries supplies 15%. Moreover, 36% are supplied through private medical sources, and 6% are supplied through other sources. The Kenya Service Provision Assessment of 2010 reports that 85% of Kenyan health facilities offer some type of temporary modern methods of FP at minimum, with little difference in the availability of services by type of facility (KSPAS,2010). According to (PMA 2020 and ICRHK 2014), the most frequently reported method among women of reproductive age in union are Injectable (52.6 percent), implants (19.6 percent), and pills (13.1 percent). Kenya is acknowledged to have dedicated resources' to reproductive health through the ministry of health (MOH) which spearheads the policies, guidelines and strategic plans to ensure that men and women reproductive health needs are sufficiently met, UNHCR baseline study (August, 2011)

2.4 FAMILY PLANNING AMONG SOMALI COMMUNITY

Studies demonstrate that Somali communities have negative attitudes and believe towards the use of contraceptives to space the birth of their children. More often, the family planning is perceived to be prohibited by the Islam and large families is favored (UNHCR baseline study, August, 2011). While many Islam scholars have explained in details with reference to Quran about the family planning, many Somalis men and women still misconstrued the Quran and

misinterpret it to a larger extent. Depending on whose scholar's ideology on family planning is promoted, it shapes the thinking and attitudes of family planning on many Muslims, more specifically the Somali community. The Scholar explains that the condom and other form of the Family planning may be practiced under certain condition. These conditions states a woman should not use birth control pills, unless the following conditions are met:

Firstly, if she is ill and cannot cope with a pregnancy every year, or she is physically unfit, or there is some other reasons that getting pregnant every year may harm her. Secondly, her husband should grant her permission, because the husband has the right to have children. There must also be consultation with the doctor, to find out whether these pills are harmful or not.

If these two conditions are met, there is nothing wrong with taking these pills, but that should not be on a permanent basis, because that means preventing having children. The Quran also through the Hadith describes that there is nothing wrong in practicing 'azl (coitus interruptus), to prevent pregnancy. The hadith attempts to justify why withdrawal method of birth control was allowed. The Hadith asserts that the main reason was so as to allow woman to continue doing her work.

According to some scholars' school of thought, there are methods which are religiously accepted which include condoms, IUD, tubal tie, coil etc. which may be practiced as Contraceptives. *"Let there be no change in Allah's creation."* (Qur'an 30:30) this Quran recitation clearly forbids any contraceptive methods that are known to be non-reversible and that which involved tubal ligations and vasectomy or any other procedure that may be viewed to alter the creation of women and by this it means mutilation. To examine, this reason from a cultural perspective, the Kenyan Somalis have culturally practice circumcision on girls which involves genital mutilation. Which in their view is meant to be an intervention to sexual activities before marriage, practice

so strongly discouraged? This contradicts the assertion on the FP methods such as tubal ligation and creates a sufficient basis to investigate the factors which actually has significant contribution to low contraception amongst the Kenyan Somali women and by back strokes, make objective attempts to correctly relates and interpret the Quran.

Family planning methods

Family planning refers to use of modern contraceptives or natural techniques for either limiting or spacing pregnancies. Intrauterine Device (IUDs), Combined Oral contraceptive (pills), Vasectomy, tubal ligation, injections, implants, male and female condoms, diaphragm and emergency contraception are modern methods of contraception. Similarly, traditional methods include the cervical mucus method (billings' method), the Basal Body Temperature (BBT) method, and the sympto-thermal (multiple indicators) method, the rhythm (calendar) method, the Standard Days method (SDM), the Lactation Amenorrhea Method (LAM) and coitus interrupters (withdrawal method).

Benefits of family planning

A woman's ability to space and limit pregnancies has a direct impact on her health and well-being. Contraceptive use prevents ill-timed pregnancies and births. (Cleland *et al* 2006). Family planning help women to exercise choice and control over their fertility; advancing gender equality, and increasing women's opportunities for education, employment and full participation in society (Cohen, 2008).

Contraceptive use prevents unintended pregnancies and reduces induced abortion, given the fact that 43% of unintended pregnancies result in abortion (Finer and Zolna, 2006) The number of healthy years of life lost because of disability and premature death among women and their newborn would decline by nearly two thirds, from 61 million to 22 million disability-adjusted life

years (DALYs) lost (Singh *et al*, 2009). Integration of HIV prevention, family planning and maternal health services would be even more cost-effective, for example, by helping HIV infected women avoid unintended pregnancies and helping pregnant women living with HIV protect their babies' health (Singh *et al*, 2009)

2.5 Factors influencing modern contraceptive use

Several studies have been conducted on determinants of family planning use. In some cases strong associations have been established between family planning use and some socio-demographic, socio-cultural and socio-economic characteristics of women. Depending on the context and setting in which the studies were conducted results were either consistent or contrasting. However, not many studies have been conducted to investigate factors which significantly determine the use of the contraceptives among the Somali women. Most of the studies done looked superficially on religion factor as major reason why Kenyan Somali women and Somali women elsewhere do not practice contraception. The deep probe on what exactly is a major contributing factor within the Islamic religious belief, contributes to low contraceptive uptake has not been done. Therefore, this study looks deeper within and without the Islamic belief and practice on contraceptives use.

Demographic Factors

Age has been known to be one of the barriers of contraceptive use as many reproductive health providers' declines to serve young women (less than 18 years) or on the other hand young women are afraid or ashamed of going to seek these services from hospitals or clinics. (Morrison 2000) In an analysis of 10,204 women from the 2011 demographic and health survey data of Ethiopia, it indicated that younger women were more likely to used modern contraception than older women (Lakew *et al* 2013). In Kenya Contraceptive prevalence peaks among married

women in the 30-34 age-group and is lowest for women age 15-19. (KDHS, 2014). 66% of Kenyan Women with 3-4 children are the most likely to be using contraception (KDHS 2014)

Women in legal and consensual marriages often represent the majority of sexually active women. They have greater frequency of intercourse, higher fertility and are exposed to risk of unwanted pregnancies. They are also expected to be using contraceptives more than other groups of women. It is also known that this group of women need consent from their partners and in some case mother in laws so as to decide on contraception.(Morrison, 2000; Chandhick *et al.* 2003) (Lakew *et al* 2013) concluded that Women who were in polygamous relationship were less likely to use contraception than those in monogamous relationship. This might be due to the nature of the relationships, where there may be competition for more children among women with the same husband.

Socio-economic factors

Education remains the most important factor that affects contraceptive use (Rahayu et al., 2009). The contraceptive use shows increase with level of education. A study conducted in rural areas of Burkina Faso indicates that of all the women who practice modern contraception 11.4% are women with no education, 20.7% are women with primary education and 43% are the women with Secondary education practiced modern contraception (African population studies, Vol. 28, NO. 1 April 2014). Among Kenyan women, only 18 percent of currently married women with no education use a method, while more than half of women with at least some primary school level of education use contraception. (KDHS 2014) According to, (Beekle *et al.*, 2006; Magadi *et al.*, 2000; Addai, 1998; Bhatia *et al.*, 1995) FP utilization increased with attainment of secondary education for both women and their husbands. Indeed lack of formal education has been shown

to strongly reduce modern contraceptive use. A higher education attainment increases female decision making power and awareness of the benefits of contraception (Stephenson *et al.*, 2004). Employment, especially where a woman has to work outside the home is viewed as an index of commitment to and involvement in non-familial roles. It has also been observed that female employment outside home often leads to a desire for small families and thereby increasing the acceptance rate of contraceptives.

Cultural factors

Women may have unmet need for family planning because of opposition from her spouse or anyone else in her social influence group. Reasons behind opposition may be that they want more children, do not accept male physicians to examine their wives or worried that their wives might be protected from pregnancy (Bhattacharya, *et.al* (2006).

Spousal internal discussion of family planning has a significant positive impact in reducing both spacing and limiting needs (Korra, 2002). A qualitative study in Tanzania identified cultural barriers to modern contraceptive use in Matemwe village, Zanzibar, revealed that despite free and easy access to contraceptives, only 2% of Matemwe women participated in the village's family planning programme. Several factors were found to influence contraceptive use, including strong Muslim beliefs, male dominance over females (especially in polygamous relationships), and limited exposure to modern ideas via education and travel. Interviews indicated that in order to increase the contraceptive uptake in Matemwe, cultural barriers to family planning must be confronted. (Keele, Forste & Flake, 2005)

Using data from Ethiopia and Kenya (Dynes, Stephenson, Rubardt, & Bartel (2012) examine how perceptions of community norms differentially shape contraceptive use among men and women. The spousal children sex preference influences the use of FP. The couples whose current

number of sons is less likely reported contraceptive use. This is a cultural phenomenon in such a patriarchal society where there is prestige and honor in having many sons.

The doctrines of Islam have often been interpreted to forbid the use of family planning methods (Obermeyer 1994: Underwood 2000). The absence of a central authority or hierarchically organized clergy in Islam results in the lack of a single interpretation of the Quran (Obermeyer 1994) and thus the interpretation of the *Quran's* position on family planning is open to varied interpretation (Obermeyer 1994: Underwood 2000). The ambiguity of the *Quran* towards family planning means that attitudes towards, family planning in Muslim communities are often shaped by local consensus of opinion (Amin, Diamond and Steele 1997). Hence women's use of family planning services is often shaped by the prevailing religious attitudes and the school of thoughts from some scholars of Islamic religion and their community. Therefore, family planning services may be physically accessible in the local community, but cultural influences may socially limit its accessibility.

The Roman Catholic Church (RCC) bases itself on the papal encyclical *Human Vitae* (Pope PaulVI, 1968) to teach that every sexual act of a married couple must remain open to the transmission of life (Nakiboneka *et-al*, 2008).

CHAPTER 3: METHODS

3.1 Study design.

A Matched-set, cluster-Case control, observational study design was used because it's appropriate for population where little or no study has been done, the CPR is consistently low, follow up is difficult and financial constrains is a factor. Each of the two areas, Korogocho and Kiamaiko forms natural clusters. The design is meant to identify possible predictors of outcome and will offer good levels of comparison and better reliability of the results. The study is a three arm, case-control study to allow for a better comparison and a clear focus of the factors which significantly contributes to the low CPR. The design involved one case group and two control groups, control-1 and control-2, in each cluster. The cases are matched to control-1 and control-2 by age-group and marital status in the ratio of 1:1:1. This method resulted in three groups of subjects per area of study, Korogocho and Kiamaiko.

3.2 Area of Study

The study was carried out in Korogocho and Kiamaiko unplanned settlements. Each area forms a natural cluster. Korogocho borders the Dandora dumping site While Kiamaiko is next to Huruma bordering Mathare Slum. It's easily accessible through the outer ring road. Major settlers in Kiamaiko are Kenyan Somali mainly Butji tribe of the Somalis. Korogocho is inhabited by several communities. It's divided into nine villages. The Kenyan Somalis lives in one of the village called Korogocho. The two clusters are adjacent to each other separated by the outer-ring road.

3.3 Study population

The populations for the case-control study are Kenyan-Somali women residing in both Korogocho and Kiamaiko unplanned settlements. The population is estimated to be about 200,000 in Korogocho and almost similar population in Kiamaiko. Korogocho doesn't have a well-established economic activity except for some small business trading. Kiamaiko on the other hand, has one of the booming businesses of goat meat supplying major places in Nairobi. The area also hosts some of the Ethiopians who are Muslim by faith.

Target population

The target population were Kenyan-Somali women of reproductive age (15-49 years) meeting the inclusion criteria. The total population of women in reproductive age is approximately 70,000 in Korogocho while those residing in Kiamaiko are about 60,000

3.4 Sampling Frame

Kenyan Somali Women

A list of the women aged between 15 and 49 years of age is generated during the forum "let's talk about our RH-"Reproductive Health". The attendants are voluntarily asked to join three groups. First group comprised of women who are currently practicing any modern contraception, second group are those who have never practiced any contraception and third group are those who once practiced contraception but have not been practicing for at least one year. The group one is then asked to show family planning appointment card. These are the cards which show the date of the next visit for the contraception, there are no details of the type of the contraceptives being consumed.

3.5 Sample size determination

The sample size was determined by using the Keish and Leslie (1965) formula as

$$n_i = Z^2 PQ / D^2 s \dots\dots\dots (1)$$

For i = 1, 2, 3 (cases, control 1 and control 2)

Where n= sample size required (n =n_{cases}+ n_{control 1}+ n_{control2})

Z = the standard normal deviate at α =5% level of significant, (1.96 for a 95% confidence interval)

P and Q are the population proportions;

P = Probability of exposure given that a person is currently using family planning and

Q = (1-P).

Since the contraceptive exposure rate from the previous survey (UNHCR, 2016) is reported to be 1.2%, then

P = 0.012, and Q=0.988 (probability of non-exposure to the contraception)

D = the desired level of precision (0.05)

Therefore, Sample size is determined as shown bellow

$$n_i = \frac{(1.96)^2 \times 0.012 \times 0.988}{(0.05 \times 0.05)} \dots\dots\dots (2)$$

$$n_i = 18.2184s$$

Assuming an 80% response rate, additional 20% was added on the sample size to correct for non-response according to Glen D Israel, Sample size determination (Glen D Israel, 1992).

Hence the n_i= (18.2184+3.64368) = 21.862 which is approximately 22 individuals.

Total sample size for a set = (n_{cases} = 22 + n_{control 1} =22 + n_{control2} =22) = 66

The total sample size of the subjects in each Cluster is 66. A total of 132 participants are recruited into the study.

Table 1: Sample size summaries for both clusters

	Kiamaiko (Cluster 2)		
	Somali women	Somali women	
Cases	$n_1=22$	$n_1=22$	
Control-1	$n_2=22$	$n_2=22$	
Control-2	$n_3=22$	$n_3=22$	
	$N_{1Som}=66$	$N_{1Som}=66$	$N=132$

3.6 Variables of the study

Independent variables used in this study comprise demographic factors, socioeconomic factors and cultural factors. The dependent variable is the current practice of modern contraceptive (Cases (Using), control (Not using)). The dependent variable is coded 1 for the cases and 0 for the controls.

Sampling Technique: The study used two-staged sampling technique to ensure a representative sample of the population of women of reproductive age in the area of study.

First stage sampling (stratified sampling): The women listed in the sampling frame are stratified by age grouped into 7 strata; (15-19), (20-24), (25-29), (30-34), (35-39), (40-44), (45-49).

Second stage sampling (Simple random sampling)

Selection of cases: The number of cases in each stratum was allocated by proportional allocation sampling technique. The subjects are then randomly selected by simple random sampling in each stratum. The cases are then matched by age and marital status to the subjects in control group-1 and control group-2. For every married case in age group (15-19), a married subject in age group (15-19) is randomly selected both from control-1 and control-2. This step is repeated until 22 subjects are obtained in each of the three arms (case, control-1 and control-2).

Inclusion criteria

Cases: (women currently using modern contraceptives)

The target population, women of reproductive age group 15 to 49 years of age who are in possession of family planning card currently using modern family planning and are living in Korogocho or Kiamaiko.

Control group-1: The study population included all women in reproductive age group 15 to 49 years of age who have never used any modern contraceptives.

Control group-2: The study population included all women in reproductive age group 15 to 49 years of age who once practiced the use of modern contraceptives but currently not using the modern methods at least in the last one year of their sexually active lives.

Exclusion Criteria

Cases: The women of reproductive age who are practicing traditional method were excluded in the study.

Control group 1: The women of reproductive age who are practicing traditional method and those who once used modern method of contraception and stopped

Control group 2: The women in reproductive age who are practicing traditional methods and those who are currently using modern methods of contraception

3.7 Theorems Formulae and Models

Binary Logistic regression model

Binary logistic regression is a general linear model which examines the influence of various predictors (independent variables) on response variable measured on binary scale by estimating the probability of event's occurrence and odd ratios. The binary response e.g. YES /NO, Success/ Failure and Use /non-use of contraceptives.

$$P(Y=1) = \text{Log} \left(\frac{P}{1-P} \right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_k x_k \dots \dots \dots (3)$$

- Where;
- Y=1, Y=0; is the binary response variable
 - P = is the probability that event of interest occurred
 - X₁, X₂, X₃... X_k are the independent variable
 - β₀ = is a constant
 - β₁, β₂, β₃... β_k are regression coefficients to be estimated

Where P is the probability when Y=1 i.e. the probability when the event of interest has occurred and 1-P is the probability when (Y= 0), i.e. when the event of interest has not occurred. The logistic regression model has three very important components, random component which specifies the distribution for outcome Y conditioned on X (Y/X), systematic component relates the parameters β to explanatory variables X and the link function which connects random and systematic component.

Random component: Supposing that Y is the response variable, which is YES/NO for the outcome variable, use/non-use of contraceptive. Such that Y=1 if the respondent uses contraceptives with the probability P (Y=1/X) = p or (Y=0) otherwise with probability P(Y=0/X) = 1-p, then Y is Bernoulli distributed, Y~Bern (p) with probability distribution

$$f (y, p) = p^y (1-p)^{1-y}$$

For the group data part of the contraceptive data, the age strata, Y being the response variable, the P (Y_i =1/X) = p_i, for all i. defining α =∑_{alli} Y_i, the number of women using contraceptives in a sample for each arm of study (n=22) in both strata. Then α is a random variable binomially distributed with n and p parameters, α ~ B (n,p) with

Systematic component : For the random variable Y_i , $i= 1,2,\dots,n$ with expected values $E(Y/X)=\pi_i$, $i= 1,2,\dots,n$, relates the predictors x_1,x_2,\dots,x_n as linear predictors $\beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots + \beta_kx_k$.

Link component: The expected value, $\pi_i = E(Y/X)$ relates to explanatory variables by logit link $\ln(\pi_i/1-\pi_i)$ hence the logistic regression model is expressed as

$$\ln\left(\frac{P}{1-p}\right)=\beta_0+\beta_1x_1+\beta_2x_2+\beta_3x_3+\dots+\beta_kx_k\dots\dots\dots(4)$$

Assumptions

Logistic regression assumes that independent variables are not multivariate normal. The dependent variable is a binary outcome. The $P(Y=1)$, the probability of event occurring hence the factor level 1 of the dependent variable represents desired outcome. The error term has to be independent, i.e. each observation must be independent. Assumes little or no multicollinearity

3.8 Conditional logistic regression model

The conditional logistic regression is a specialized logistic regression which is applied to a matched case control study designed where each case with a certain attribute is matched with control subjects without the attribute (p cases to q control, p:q). The case and control are matched in the ratio of 1 case to 2 control subjects (1:2). Conditional logistic regression is appropriately applied to the contraceptive study specifically because it help to condition out the nuisance parameters of the matched case control data, and estimates the odd ratio of the factors hypothesized to influence contraceptive use among the Kenyan Somali women of the reproductive age.

The **UMcFp** (Use of modern contraceptive family planning) of the Kenyan Somali women is a function of the following variables denoted with X's in the order of $X_1, X_2, X_3\dots$ respectively

UMcFp= f(Age, Spousal-approval, Spousal-talk on contraceptives, Contraceptives knowledge, Spousal Pri. Educ, Women pry-Education, Polygamy, Spousal Sec. Education, Women Sec- Education)

Represented as shown below in terms of X's:

$$\text{UMcFp} = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8)$$

Let (Y_{i1}, Y_{i2}) denote the i th pair of observations, $i=1, 2 \dots n$. The model has the form shown in equation bellow and is called a conditional logistic regression model, since the effect β is defined conditional on the subject.

$$\text{Logit } P(Y_{it}=1) = \alpha_i + \beta x_t \dots \dots \dots (5)$$

Where:

α are regression coefficients associated with stratum

X_t is the predictor variable in the model

β_1 is the regression coefficients to be estimated

Estimating the Coefficients of the conditional logistic regression model

Applying maximum likelihood method, Conditional on $S_i=1$, the joint distribution of matched pairs is given as

$$\prod_{S_i=1} \left(\frac{1}{1+\exp(\beta)} \right)^{y_{i1}} \left(\frac{\exp(\beta)}{1+\exp(\beta)} \right)^{y_{i2}} = \frac{[\exp(\beta)]^{n_{21}}}{[1+\exp(\beta)]^n} \dots \dots \dots (6)$$

Where the product refers to all pairs having $S_i=1$.

$$\log \prod_{S_i=1} \left(\frac{1}{1+\exp(\beta)} \right)^{y_{i1}} \left(\frac{\exp(\beta)}{1+\exp(\beta)} \right)^{y_{i2}} = n_{21} \beta - (n_{21} + n_{12}) \log(1 + \exp(\beta))$$

Differentiating the log of this conditional likelihood and equating it to 0. Solving it yields the conditional ML estimators' β .

$$n_{21} - (n_{21} + n_{12}) \frac{\exp(\beta)}{1 + \exp(\beta)} = 0 \dots\dots\dots (7)$$

$$\hat{\beta} = \log(n_{21} / n_{12})$$

By the delta method which is similarly applied in 2x2 contingency tables, we can obtain that

$$SE = \sqrt{1/n_{21} + 1/n_{12}} .$$

The Consistent property of estimate β

Assuming for a random sample of n pairs, it can easily be shown that

$$\prod_{i=1}^n E(n_{21} / n) = \frac{1}{n} \sum_{i=1}^n \frac{1}{1 + \exp(\alpha_i)} \frac{\exp(\alpha_i + \beta)}{1 + \exp(\alpha_i + \beta)} \dots\dots\dots (8)$$

by the definition of n_{21} and independence of responses for different observations by the same subject.

Similarly,

$$\prod_{i=1}^n E(n_{12} / n) = \frac{1}{n} \sum_{i=1}^n \frac{\exp(\alpha_i)}{1 + \exp(\alpha_i)} \frac{1}{1 + \exp(\alpha_i + \beta)} .$$

Then we apply the law of large numbers (WLLN) and obtain that

$$n_{21} \xrightarrow{p} \sum_{i=1}^n \frac{1}{1+\exp(\alpha_i)} \frac{\exp(\alpha_i+\beta)}{1+\exp(\alpha_i+\beta)}$$

And

$$n_{12} \xrightarrow{p} \sum_{i=1}^n \frac{\exp(\alpha_i)}{1+\exp(\alpha_i)} \frac{1}{1+\exp(\alpha_i+\beta)}$$

Therefore,

$$n_{21} / n_{12} \xrightarrow{p} \exp(\beta) \dots\dots\dots (9)$$

Hence $\hat{\beta} = \ln(n_{21} / n_{12}) \xrightarrow{p} \beta$, is a consistent estimator.

To fit the conditional logistic regression model into the matched pair’s case-control data and obtain odd ratios for the covariates, consider the following two conditional logistic functions for a matched pair of observations. Let (Y_1, Y_2) denote the pair of observations of a randomly selected subject in the i^{th} stratum, where a “1” outcome denotes (case) and “0” outcome denotes (control). A model can be fitted when $X_i=1$ and $X_i=0$ respectively.

By permitting subjects to have their own probability distributions, the conditional model equation for Y_{it} , observation t for subject i , is

$$\text{Logit } [P(Y_{it}=1)] = \alpha_i + \beta x_t$$

Then,

$$P(Y_{it}=1) = \frac{\exp(\alpha_i + \beta x_t)}{1 + \exp(\alpha_i + \beta x_t)}$$

Where $x_1 = 0, x_2 = 1$, and assuming a common effect β . For subject i , we have

$$P(Y_{i1}=1) = \frac{\exp(\alpha_i)}{1 + \exp(\alpha_i)}, \quad P(Y_{i2}=1) = \frac{\exp(\alpha_i + \beta)}{1 + \exp(\alpha_i + \beta)}$$

Then,

$$\frac{P(Y_{i2}=1)}{P(Y_{i2}=0)} = \exp(\alpha_i + \beta) \dots\dots\dots(10)$$

And

$$\frac{P(Y_{i1}=1)}{P(Y_{i1}=0)} = \exp(\alpha_i) \dots\dots\dots(11)$$

The Odd ratio is then obtained by dividing (10) and (11) to eliminate the nuisance parameters and obtain the equation below.

The nuisance parameters at this point are eliminated completely from the model and thus β regression coefficients are retained and estimated.

Therefore, $\log(\text{OR}^{\text{Response}, X's}) = \beta$

$$\text{OR}^{\text{Response}, X=x} = \text{Exp}(\beta) \dots\dots\dots(12)$$

3.9 McNemar's TEST

A standard McNemar's test of paired binary response data displayed in 2X2 contingency table is adapted to test whether the factors under consideration can influence the use or non-use of modern contraceptives.

Assumptions

The McNemar's test has two basic assumptions which have to be satisfied. First, the observations have to be exactly pair-matched and secondly, each pair must be composed of dependent observations say X and Y. That is they should be mutually exclusive.

McNemar's test

The McNemar's test, is a statistical hypothesis test in which if the assumptions hold, then it's distributed according to Chi-squared distribution with one degrees of freedom. The contingency table composed of paired observations classified as either concordant or disconcordant.

Table 2: McNemar's contingency table

		<i>Control (currently not using modern contraceptive)</i>	
		X	1
<i>Cases (women currently using modern contraceptives)</i>	1	Concordant (Case, control)	Disconcordant-1 (Case, control)
	0	Disconcordant-2 (Case, control)	Concordant (Case, control)

Where **X** is the covariates and **(1, 0)** are dummy variables **1** indicating presents of the attribute while **0** indicates absence of attribute being investigated.

The null hypothesis H_0 : the p- value is equal to $\frac{1}{2}$ ($H_0: P\text{-value} = \frac{1}{2}$), which means that it is equally likely to obtain disconcordant-1 and disconcordant-2. (I.e. the predictor variable has equal influence in determining whether one is likely to use/not use modern contraceptive and therefore cannot lead one to make a conclusive remark)

The alternative Hypothesis H_1 : The p –value is either greater than or less than $\frac{1}{2}$ ($H_1: P\text{-value} < \text{or} > \frac{1}{2}$). This simply means that it's not equally likely to obtain disconcordant-1 and disconcordant-2 and thus conclusive inference can be drawn)

The decision rule for approximating McNemar's test include:-

1. If the number of disconcordant pair s is more than 20, then normal approximation may be employed. (Disconcordant is the sum of disconcordant-1 and disconcordant-2)
2. If the number is less than 20, then the exact test is used.

The test statistics is for exact test is given as below

$$X = (n_A - n_B) \sqrt{2/n_D} \dots\dots\dots(13)$$

Where: n_A = Disconcordant-1

n_B = Disconcordant-2

n_D = Sum of disconcordant-1 and disconcordant-2

While the version of the test statistics corrected for continuity is presented below.

$$X_C = (|n_A - n_D/2| - 1/2) \sqrt{2/n_D/4} \dots\dots\dots(14)$$

Hence if the assumptions stated holds and the null hypothesis is true then X and X_C are distributed according to the chi-square distributions.

3.10 Data collection techniques

The instruments used in the study were structured, self-reporting questionnaires and focus group discussions (FGDs).

Structured Questionnaire

Structured questionnaires were administered to cases and control recruited to participate in the study in order to collect quantitative data. Questionnaires used closed-ended structured questions on the three thematic areas (Socio-economic, cultural factors and Knowledge), with limited but specific questions addressing contraceptives use. Most of the questions were constructed to elicit simple “Yes”/“No”/“Do not know” responses, to minimize nonparticipation and response errors. However, few open ended questions were included to elicit more detail response to give more insight of the factors influencing contraceptive use.

Focused group discussion

FGD discussion was conducted with the women meeting general inclusion criteria. Six FGDs were conducted in the community. Participants who attended the FGDs were all women in reproductive age, irrespective of their use or non-use of family planning. The FGDs group each

had between 10 to 12 participants, each FGD discussion session took 30 minutes. These groups participated on voluntary basis.

3.11 Pilot Testing of the questionnaires

The research instruments were pre tested by administering the tool to the women of reproductive age meeting the inclusion criteria for both cases and controls chosen randomly. This was done to ensure that the tool will produce accurate answers. The tool was then revised and adjusted before administering it to actual study subjects.

3.12 Data analysis

Fundamentally, the data collected was analyzed in three stages; the first stage involved the examination of the respondents' distribution according to each selected background characteristics such as age, marital status and level of education. The basic data summarizing techniques such as frequency distribution and the related statistics were adopted. The second stage of the analysis involved use of McNemar's test at (95% confidence interval) 5% level of significance to determine factors that significantly contributes to the use/non- use of contraceptives. Stage three analyses of the data involved the use of conditional logistic regression to establish the relationship between socio-cultural, socio-economic, contraceptive knowledge and the use of modern contraceptives. Condition Logistic regression was used to estimate the odd ratios and probabilities of contraceptive use and the associated statistics of the study outcome.

Ethical considerations

Ethical clearance was sought from the university of Nairobi ethical review committee. The written informed consent was sought from the study subjects involved in data collection. Confidentiality of collected information was strictly ensured by subjects not providing names or any identities. Subjects were given rights to opt out of the study any time they desire.

CHAPTER 4: RESULTS

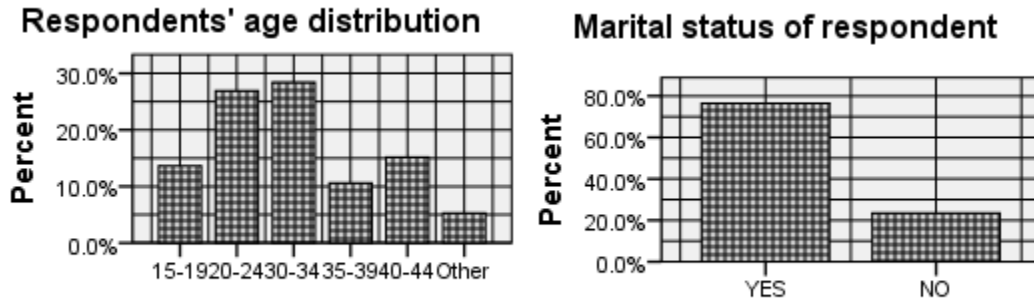
4.1 Empirical Results

The table gives a summary of the demographic distribution of the participants in the two clusters, Korogocho and Kiamaiko informal settlements. Most of the women are of age group (20-24), between 25% and 29% and (30-34), between 20% and 29% compared to other age groups. Over 63.6% are married and up to 84.1% have primary or no formal education while almost none have tertiary education 2.3%

Table 3: Demographic characteristics of the respondents'

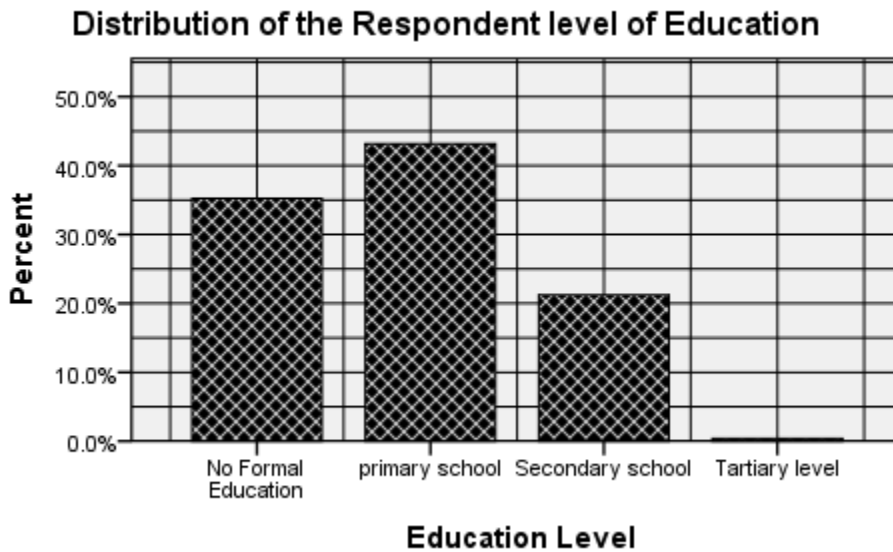
Korogocho Kiamaiko Clusters						
Characteristics	Cases		Control-1		Control-2	
Age	Freq (%)		Freq (%)		Freq (%)	
15-19	34.1		4.5		18.2	
20-24	29.5		25.0		25.0	
25-29	0.00		0.00		2.3	
30-34	20.5		29.5		22.7	
35+	16		37.9		31.7	
Marital status						
Married	68		63.6		68.2	
Not Married	31.8		29.5		29.5	
Marriage type						
Monogamous	63.6		63.6		72.7	
Polygamous	22.7		29.5		22.7	
Education level						
No formal Education	45.5		34.1		52.3	
Primary	38.6		40.9		29.5	
Secondary	15.9		25.0		15.9	
Tertiary	0.00		0.00		2.3	
Religious Affiliation						
Islamic	43.2		43.2		47.7	
Christianity	40.9		36.4		40.9	

Figure 1: Respondent's age and marital status distribution



The data showed that most of the respondents were of the age group 20-24 years (cases=29.5%, control-1 = 25% and control-2 = 25%) and 30-34 years (cases=20.5%, control-1 = 29.5% and control-2 = 22.7%). While the least number of respondents were of the age group 45-49 years (cases=2.3%, control-1 = 4.5% and control-2 = 4.5%). Graph 1

Figure 2: Respondents' level of education



The data showed that most of the Kenyan Somali women at most have primary or no education at all.

Figure 3: **Knowledge of existence of contraceptives on modern family planning**

	Cases N (%)	Control-1 N (%)	Control-2 N (%)
Yes	48 (34.5%)	44 (31.6%)	47 (33.8%)
No	38 (30.6%)	45 (36.2%)	41 (33.11%)

Table 4: **Knowledge of the contraceptives methods on modern family planning**

Methods	Cases N (%)	Control-1 N (%)	Control-2 N (%)
All method	11(4.1)	6 (2.3)	17 (6.4)
Pill	21 (8.0)	9 (3.4)	9 (3.4)
Coil	20 (7.5)	11(4.1)	3 (1.1)
Injection	7(2.6)	11(4.1)	10(3.8)
Condom	4(1.5)	7(2.6)	3 (1.1)
Norplant	2 (0.8)	2 (0.8)	5 (1.8)
Female Tubal ligation	2 (0.8)	1 (0.38)	1(0.38)

Knowledge of family planning

(Table3). About 33% of both cases (34.5%) and controls (31.6%) knew at least one method of modern contraceptive. Pills and Coil were the most known modern methods of family planning amongst cases (8.0%, 7.5%) and control-1 (4.1 %, 3.4%), while control-2 (3.4%, 1.1%) then followed by the injection (cases-2.6%; control-1 4.1% and control-2 3.8%). Female tubal ligation was the least known method in all the study groups (Cases=0.8%, control-1= 0.38%, control-2=0.38%).

Table 5: Main sources of information on modern contraceptives

Sources	Cases N (%)	Control-1 N (%)	Control-2 N (%)
Television	19 (7.2)	14 (5.3)	20 (7.5)
Radio	16 (6.1)	28 (10.6)	11(4.1)
Hospital/Clinic	20 (7.5)	17 (6.4)	21 (8.0)
Husband	1 (0.37)	0 (0)	0 (0)

Hospital/Clinics was the main source of family planning information in the slums for cases (7.5%) and control-2 (8%) while Radio was the major source of information for the control-1 (10.6%), Television also contributes fairly large information to the population (Cases=7.2%, control-1=5.3% and control-2= 7.5%). Husband shared almost no information about the family planning methods.

4.2 McNemar’s test results

Table 6: Summaries of McNemar’s test at 5% level of significance

Factors	McNemar’s chi-square	P-Value
Spousal approval	5.4000	0.02014*
Spouse discuss contraceptives	6.2308	0.01255*
Contraceptives knowledge	5.3333	0.02092*
Women Sec. Education	1.6000	0.2059
Women Pry. Education	5.4444	0.01963*
Spouse Sec. Education	1.0000	0.3173
Spouse Pry. Education	2.5714	0.1088
Polygamous marriage	3.5000	0.06137

4.3 Conditional logistic regression outcomes

Figure 4: OR (case-control/ Husband approval) =Exp (β1Husband Approval)

X’s	Variables (X’s)	e ^{β(t)}	95% CI	P-Values
X ₁	Spousal approval	OR=26.113	(3.432, 198.7),	0.00163 *
X ₂	Spousal talk of cntreptv	OR= .1279	(0.0232,0.7053)	0.01824 *
X ₃	Cntrptv Knowledge	OR= 2.932	(1.067, 8.061)	0.0371 *
X ₄	Women Sec. Education	OR= 2.183e+09	(0, inf)	0.998
X ₅	Women Pry. Education	OR= 6.859e+08	(0, inf)	0.998
X ₆	Spouse Sec. Education	OR= 4.5811	(0.8054, 1.890	0.0588.
X ₇	Spouse Pry. Education	OR= 1.6352	(0.6115,0.4556)	0.4507
X ₈	Polygamous marriage	OR= 0.0586	(2.651,0.1374)	0.0586.

Empirical results: Conditional Logistic regression

The outcome (dependent) variable was the current use or non-use (Case-control) of modern contraceptives. While the response variables considered in conditional logistic regression model included, Spousal approval, contraceptives knowledge, marriage type, spousal/women's' level of education and spousal discussion on the contraceptives.

The Kenyan Somali women who have spousal approval of the contraceptives are 26.1 times likely to practice modern family [OR=26.113, C.I (3.432, 198.7), P Value=0.00163] as opposed those whose spouse does not approve of the modern contraceptives.

$$OR^{(case-control/ Husband approval)} = \text{Exp} (3.262 * \text{Husband Approval}).$$

The primary education level for the Kenyan Somali women significantly determine the use of the contraceptives (McNemar's chi-square=5.444, P-value = 0.01963). While women whose spouse attains secondary education level are 1.63 times more likely to practice modern contraception [OR= 1.6352, C.I (0.6115, 0.4556), P-value 0.0588].

$$OR^{(case-control/ Spouse Pry Edu)} = \text{Exp} (0.4918 * \text{Spouse Pry Edu}).$$

Similarly, Kenyan Somali women whose spouses discussed contraceptives were also 12.79% more likely to practice modern family planning (OR= 0.1279, C.I (0.0232, 0.7053), P Value=0.01824 *). $OR^{(case-control/ Husband talk-cntr)} = \text{Exp} (*\text{Husband talk-cntr}).$

The women who are in polygamous type of marriage are 37% likely to use contraceptives [OR = 0.3773, (CI = (2.651, 0.1374), p value = 0.0586)] Women whose spouses approve of modern family planning with their partners were 16.211 times more likely to use modern family planning

methods compared to those whose spouses did not approve. While on the other hand, only 13% of Kenyan Somali women discuss the family planning with their husbands. The Quran was widely cited as the reason for non-use of the contraceptives 45% of the time. Moreover, women with knowledge of modern family planning were 2.932 times likely to use contraceptives compared to those who didn't have knowledge of family planning. [OR= 2.932, C.I (1.067, 8.061), P Value=0.0371 *]. 57% of those who are never used and are currently not taking any family planning cited Quran doctrines as the main reason of not practicing the family planning while 46.45% cited spouse as the major decision makers on the use of family planning.

4.4 The believe on the contraceptives by the Kenyan Somali women

The Kenyan Somali women believe that the contraception is against the Quran. They argued so strongly that indeed as much as there are methods of contraception, which does not contravene the Quran and which may be practiced, the decision to practice family planning is entirely determined by their husbands. "If my husband decline to approve of any method then I cannot use any family planning", said one of the participant during the focus group discussions.

The believe that any method such as tubal ligation which is least known (cases=0.8, control-1 = 0.38 and control-2 = 0.38) is said to directly contravene the Quran. The argument behind this assertion is that any effort to do an irreversible procedure is an attempt to correct God. Hence, this is an acceptable.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This case-control study sought to determine factors influencing the use of modern family planning in the two unplanned settlements of Korogocho and Kiamaiko, mainly those that influence low use of contraceptives. The results show that, while family planning knowledge and awareness and level of education are factors which determines contraceptive use in other studies, this study shows consistent results of these determinants of contraceptives use among the Kenyan Somali women in Korogocho and Kiamaiko. Factors such as spousal approval, spousal discussion of the contraceptives, knowledge, and level of education, religious beliefs and varied interpretation by different Muslim scholars about modern family planning are major barriers to family planning use in the two unplanned settlements. The policies focused towards improving modern family planning method use need to strongly consider starting discussions with the spouses, Muslim scholars and Kadhis to educate Muslims on the use of family planning.

5.2 Recommendation

Informed by the findings of this research, modern family planning methods use is influenced by several factors which need multi-prong solutions and approach. The Kenyan Somali women are faced with various forms of believes drawn from different front's namely Muslim scholar's personality, religious belief and cultural influence. The following recommendations are made. The awareness on the available methods and benefits of contraceptives need to be implemented first to the Muslim religious leaders, spouses and then women. This way, the community will understand the availability of reversible modern contraception methods which conform to their religious belief.

Implement programs that teach the women and men the health problems existing to mother and child and how this affects them not only health wise but also how it limits their economic development. This could be realized by first establishing that any birth-to-pregnancy interval of six months or less elevate the risk of maternal mortality and still births while birth-to-pregnancy interval of 18 months or less is associated with elevated risk of infants, neonatal and perinatal mortality. (DeVanzo et-al, 2007)

Creation of discussion groups on harmonized interpretation of the Quran verses and hadiths on the modern contraceptives and maternal-child health.

These recommendations would lead to decrease TFR and maternal-child mortality and morbidity. Strengthen institutional involvement on the awareness on the suggested approach is expected to lead to increased CPR in these two areas among the Kenyan Somali women.

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