

**DETERMINANTS OF UPTAKE OF LONG ACTING REVERSIBLE
CONTRACEPTIVES BY WOMEN SEEKING FAMILY PLANNING SERVICES IN
KAKAMEGA COUNTY, KENYA**

BY

SUSAN K ONTIRI

**A THESIS SUBMITTED IN PARTIAL FULFILMENT FOR THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF PUBLIC HEALTH (EPIDEMIOLOGY AND
POPULATION HEALTH)**

SCHOOL OF PUBLIC HEALTH AND COMMUNITY DEVELOPMENT

MASENO UNIVERSITY

© 2016

DECLARATION

I hereby declare that this thesis report is my original work. To the best of my knowledge, it has not been presented for any award at any university.

Susan K. Ontiri

EL/ESM/00422/2013

SignatureDate.....

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

Prof. Collins Ouma, PhD

Department of Biomedical Sciences and Technology

School of Public Health and Community Development

Maseno University, Kenya.

Signature.....Date.....

Prof. Rosebella Onyango, PhD

Department of Public Health

School of Public Health and Community Development

Maseno University, Kenya.

Signature.....Date.....

ACKNOWLEDGEMENTS

My sincere appreciation to the following for the contributions they made to the completion of this thesis.

I want to thank the study participants of Kakamega County for allowing me to conduct my study amongst them and for their willingness and readiness to participate in the study. My sincere gratitude also goes to the Kakamega County, Sub-County health management authorities and to the various health facilities in charges for allowing me to conduct my study in the health facilities.

I also thank my University supervisors, Prof. Collins Ouma for his guidance, mentorship, continuous encouragement and patience throughout the process of writing this thesis, Prof. Rosebella Onyango for her encouragement and review of my work.

To my research assistants: Annete, Paul and Mary, I appreciate your input. To all those who contributed directly and indirectly to this project, a big thank you and God bless you abundantly.

DEDICATION

To my husband Vincent Ouma for his moral support, son Jayden Masso for the inspiration and to my dad and mum, Jerry Ontiri and Marcella Kerubo for having instilled in me the spirit of hard work and given me a good foundation.

ABSTRACT

The prevalence of unintended pregnancy in Kenya continues to be high with 43% of all births reported as unintended. A fifth of these births are due to incorrect use of short-term contraceptive methods which are the most popular methods resulting in contraceptive failure. In contrast, studies have shown that Long Acting and Reversible Contraceptive (LARC) method which are least popular have the highest effectiveness, do not depend on users' adherence and do not require frequent visits for re-supply. Despite these advantages, LARC uptake is very low in Kenya and the reason remains unknown. Modern Contraceptive Prevalence Rate (CPR) in Kenya is at 46.5% of which only 3.5% of women are using LARC. In Kakamega County, the CPR is at 46.0%, however, LARC uptake is even lower at 2.0%. As such, the current study was carried out to assess the determinants of the uptake of LARC by women seeking family planning services in public health facilities in Kakamega County. In a cross-sectional study, socio-demographic factors, reproductive health factors and health system factors associated with LARC uptake were explored. This was a health facility based cross-sectional survey using multi-stage sampling to select 1 public health facility in each of the 12 sub-counties based on the one with the highest catchment population. A total of 423 women of reproductive age (18-49 years) visiting the family planning clinic were randomly sampled through client exit interviews. In addition, 12 health care providers, one from each facility were interviewed. Data on independent variables including socio-demographic characteristics (age, level of education, marital status, religion, occupation and residence), reproductive health characteristics (parity, sexual debut age, desired number of children, fertility intention, age at first birth and number of living children) and on health system factors (cost, commodity supply, sources of information, contraceptive counseling) was collected through structured, interviewer administered questionnaires. Chi-square tests were used to determine the proportions. Logistic regression analyses was used to identify the determinants influencing the uptake of LARC and estimated odds ratio was used to establish the strength of association between the variables and the uptake of LARC. P-values ≤ 0.05 were considered statistically significant. The results demonstrated that on socio-demographic factors; being ≥ 35 years of age [OR= 2.15; 95% CI, 1.04-4.48, $P=0.04$], married (OR, 2.82, 95% CI, 1.41-5.62, $P=0.003$), having secondary education (OR, 2.05, 95% CI, 1.15-3.64, $P=0.015$) or tertiary education (OR, 2.68, 95% CI, 1.18-6.09, $P=0.018$) were associated with LARC uptake. On reproductive health factors, age at first birth (OR= 1.13; 95% CI, 1.02-1.26, $P=0.018$) and having no desire for more children (OR= 2.71; 95% CI, 1.21-6.07, $P=0.015$) while on health system factors, cost (OR=1.02; 95% CI, 1.00-2.03, $P=0.001$), information on LARC from a formal network (OR=1.82; 95% CI 1.19-2.79, $P=0.006$), prior implant counseling (OR=23.48; 95% CI, 2.94-187.45, $P=0.003$) and prior IUCD counseling (OR=10.6; 95% CI, 1.25-90.32, $P=0.030$) were significantly associated with uptake of LARC methods. Strategies to enhance awareness on the suitability of LARC methods by all women, strengthening contraceptive counseling, addressing cost barriers and shortage of staff in facilities will increase the uptake of LARC. Understanding the determinants associated with LARC use contributes to a better uptake of these methods. Information generated provide decision-making and actions that lead to increased LARC uptake hence reducing the burden of unintended pregnancy caused by failure of short term methods.

TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
ABSTRACT	v
TABLE OF CONTENTS.....	vi
ABBREVIATIONS and ACRONYMS	viii
OPERATIONAL DEFINITIONS.....	ix
LIST OF TABLES	x
LIST OF FIGURES	x
CHAPTER ONE: INTRODUCTION	2
1.1 Background Information	2
1.2 Statement of the Problem	6
1.3 Study Objectives	7
1.3.1 Broad objective.....	7
1.3.2 Specific objectives.....	8
1.3.3 Research Questions.....	8
1.4 Significance of the Study	8
CHAPTER TWO: LITERATURE REVIEW	10
2.1 The Burden of Unplanned Pregnancy	10
2.2 Significant Attributes of Long-Acting Reversible Contraceptives	11
2.3 Socio-Demographic Factors and LARC Uptake	12
2.4 Reproductive Health Factors and LARC Uptake	15
2.5 Health Care System Factors and LARC Uptake	16
2.6 Theoretical Framework	20
2.7 Conceptual Framework	22
CHAPTER THREE: METHODOLOGY.....	23
3.1 Study Area.....	23
3.2 Study Design	24
3.3 Study Population	24
3.3.1 Inclusion criteria	25
3.3.2 Exclusion criteria.....	25
3.4 Sample Size Determination and Sampling Procedure.....	25
3.4.1 Sample size determination.....	25
3.4.2 Sampling design	26
3.5 Data Collection.....	27
3.5.1 Pre testing of the questionnaires.....	27
3.5.2 Main study data collection	28
3.6 Data Management and Analysis.....	28

3.7 Ethical Considerations.....	29
3.8 Study Limitations and Potential Biases.....	29
CHAPTER FOUR: RESULTS	30
4.1 Socio-demographic characteristics and LARC uptake.....	30
4.2 Reproductive Health Characteristics and LARC uptake.....	34
4.3 Health Care System Factors and LARC uptake	37
CHAPTER FIVE: DISCUSSION.....	42
5.1 Socio-demographic factors and LARC uptake.....	42
5.2 Reproductive Health Factors and LARC uptake.....	45
5.3 Health System Factors and LARC uptake.....	46
CHAPTER SIX: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS.....	48
6.1 Summary of Findings	48
6.2 Conclusions	48
6.3 Recommendations from the Current Study.....	49
6.4 Recommendations for Future Research	49
REFERENCES.....	50
APPENDICES	54
APPENDIX 1: Questionnaire Administered to FP Clients.....	54
APPENDIX 2: Questionnaire administered to health care providers	57
APPENDIX 3: Scientific Approval.....	59
APPENDIX 4: Ethical clearance.....	60
APPENDIX 5: Research Approval	60
APPENDIX 6: Informed Consent.....	61

ABBREVIATIONS and ACRONYMS

DHS	Demographic Health Survey
FGD	Focus Group Discussion
FP	Family Planning
GBV	Gender-Based Violence
HMIS	Health Management Information System
IUCD	Intra-Uterine Contraceptive Device
KAP	Knowledge Attitude and Practice
KDHS	Kenya Demographic Health Survey
KII	Key Informant Interview
KNBS	Kenya National Bureau and Statistics
LARC	Long acting and Reversible Contraceptives
MOH	Ministry of Health
PAC	Post-Abortion Complication
RH	Reproductive Health
US	United States
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Contraceptive Prevalence Rate: The percent of women of reproductive age who are using (or whose partner is using) a contraceptive method at a particular point in time, almost always reported for women married or in sexual union

Long Acting Reversible Contraceptives: The study has adopted the Kenya's Ministry of Health definition as modern contraceptive methods in which their lengths of action range from 3-12 years. These are implants (jadelle and implanon) and IUCDs. The IUCD offers protection for up to 12 years, whereas implants is effective up to 5 years (MOH, 2012).

Short-term Contraceptive Methods: For this study, short term methods have been defined as contraceptive methods whose length of use range from daily to 3 months. This includes pills which should be taken daily and injectables which are taken every three months.

LIST OF TABLES

Table 3.1. Sample size by health facility	27
Table 4.1 Socio-demographic characteristics of respondents.....	31
Table 4.2. Association between socio-demographic factors and LARC uptake.....	33
Table 4.3. Reproductive health factors of respondents.....	35
Table 4.4. Association between reproductive health factors and LARC uptake	36
Table 4.5. Health care system interaction factors with respondents.....	37
Table 4.6. Association between health care system factors and LARC uptake.....	38
Table 4.7. Health care factors in health facilities.....	41

LIST OF FIGURES

Figure 2.1. Conceptual Framework for LARC Uptake.....	22
Figure 3.1. Map of Kakamega County showing the administrative boundaries.....	24
Figure 4.1. Contraceptive uptake of respondents.....	30

CHAPTER ONE: INTRODUCTION

1.1 Background Information

Unintended pregnancy is a major problem among sexually active women and can result from incorrect, inconsistent or non-use of contraception, or contraceptive failure –that is, becoming pregnant while using a family planning method. A global study by World Health Organization (WHO) revealed that forty percent of an estimated 185 million pregnancies that occur yearly in developing countries are unintended (WHO, 2011). Nearly a fifth of these unintended conceptions come about among women who use a modern short term contraceptive mostly due to poor adherence (Frost and Darroch, 2008). Long Acting Reversible Contraceptives (LARC) which includes intrauterine contraceptive devices (IUCDs) and the sub-dermal implants have been rated as the most effective contraceptive methods as they offer better protection against unwanted pregnancy, have few contraindications, do not depend on users' adherence or correct use, are cost effective, do not require frequent visits for resupply, are reversible with a rapid return to fertility after removal and almost all women are eligible for their use (WHO *et al.*, 2012).

LARC prevents unintended pregnancy for at least three years and when removed return of fertility is prompt. They also combine reversibility with high effectiveness, and are largely independent of users' compliance (Blumenthal *et al.*, 2011). Effectiveness is a key feature for women and couples using contraception to avoid unwanted pregnancy. Only 1 unintended pregnancy occurs among every 2,000 implant users in the first year of use. In contrast, failure rates in the first year of typical use of the commonly used short term methods are considerably higher: 90 unintended pregnancies per 1,000 users of pills, and 60 unintended pregnancies per 1,000 users of the injectable. Thus, implants are 120 times more effective than the injectable and

180 times more effective than the pill. The effectiveness of the implant and IUD are nearly the same (WHO *et al.*, 2012).

Several studies have shown that socio-demographic factors influence uptake of LARC methods. Demographic factors such as age of women, marital status, and education level have been cited as major factors that influence LARC uptake (Kavanaugh *et al.*, 2011; Saleem and Bobak, 2005), place of residence (Curtis and Neitzel, 1996), religion (Yeatman and Trinitapoli, 2008). Despite the fact that several similar studies have been conducted, most of those studies cited above have been in developed countries. In Kenya, what is known is that socio-demographic factors are associated with contraceptive uptake (KNBS, 2010; Magadi and Curtis, 2003). In addition, the prevalence of LARC uptake in Kakamega County is lower as compared to other counties with a similar contraceptive prevalence rate (KNBS, 2010). As such, the socio-demographic factors associated with uptake of LARC methods in Kakamega County, Kenya remains unknown. Hence, the current study determined the socio-demographic factors associated with uptake of LARC methods in Kakamega County, Kenya.

Reproductive health factors have been cited in many studies to influence uptake of LARC methods and contraceptives in general. Most of the studies carried out in the United States found that “not trying for pregnancy at time of conception” and no desire for another pregnancy within 2 years to be factors associated with LARC use among postpartum women in the United States (Frost and Darroch, 2008; Kavanaugh *et al.*, 2011; Whitaker *et al.*, 2008).

In other studies, parity (Frost and Darroch, 2008; Shah *et al.*, 1998), desired family size, women with an early birth, previous history of abortion (Dempsey *et al.*, 2012), women who had ever experienced an unwanted pregnancy (Eeckhaut *et al.*, 2014), women who had visited a clinic in

the past year for family planning services (Bharadwaj *et al.*, 2012) were identified as reproductive health factors associated with LARC use. However, majority of the above studies were carried out in developed countries. In addition, these studies failed to look at women in general, but only focused on certain women population subsets such as postpartum women and adolescents. In Kenya, reproductive health factors including fertility intention, parity, history of unplanned pregnancy have been associated with uptake of contraceptive methods in general (KNBS, 2010). What remains unclear is whether these reproductive factors, influence LARC uptake as opposed to the other contraceptive methods in Kakamega County, Kenya. As such, the current study established the reproductive health factors influencing the uptake of LARC methods by women seeking FP services in Kakamega County, Kenya.

Qualitative studies (Glasier *et al.*, 2008; Rose *et al.*, 2011; Spies *et al.*, 2010) have laid the groundwork in exploring health system factors that may play a role in uptake of LARC. LARC methods, which have been available in most developing countries for more than 40 years, have not been used widely, despite the high rate of unmet needs for highly effective modern contraception (Blumenthal *et al.*, 2011). The most prominent reasons for low uptake of LARC methods among women include: myths and misconceptions about safety and efficacy; provider bias towards short-term methods; lack of trained providers; lack of knowledge on the part of potential users (Blumenthal *et al.*, 2011; Finer *et al.*, 2012) and cost (Peipert *et al.*, 2012).

Several studies on Knowledge, Attitude and Practice (KAP) factors of contraceptive use have cited myths and misconception of FP methods as the main hindrance of their uptake. For example, a study in Yemen revealed that there were myths about misconceptions and fears of side effects especially the IUDs' performance from excessive bleeding, weight gain to added

cancer risk (Inaoka *et al.*, 1999). The side effects noted by Inaoka et al. (1999) included nausea, vomiting, and weight gain. In Morocco, it was also noted that misinformation and fear of side effects reduced access to contraceptives (Westoff and Bankole, 1998). A study in Ethiopia showed that another reason for discontinuation of use of contraceptives is the disturbance caused by menstrual cycle (Weldegerima and Deneke, 2008).

The growing evidence in the literature of the appropriateness and effectiveness of the LARC methods in reducing unplanned pregnancies evokes the need for research into determinants influencing their use among women of reproductive age. However, majority of the above studies that have focused on health system factors are qualitative in nature and also they have been carried out in developed countries. These qualitative studies, however did not establish association between health system factors and LARC uptake. In Kakamega County, Kenya, what also remains unclear is whether the health system factors influence LARC uptake. As such, the current study established the health system factors influencing the uptake of LARC methods by women seeking FP services in Kakamega County, Kenya.

While a lot of studies on LARC have been done to prove the effectiveness of the methods, however, it is important to note that though these clinical studies are very essential, they fail to explore fully the socio-demographic factors, reproductive and health factors influencing LARC uptake. They are only concerned with proving efficacy scientifically, along with establishing the cost effectiveness of these methods. Based on its comparative advantages, there is a need to have information on the uptake of long acting contraception methods to improve its utilization. It is upon this background that the current study was carried out to inform determinants that need

to put into consideration when scaling up uptake of LARC methods at Kakamega County and aid in reducing unwanted pregnancies as a result of contraceptive failure.

A desk review of the service delivery data revealed that, in 2013, 14% of all clients seen chose LARC in Kakamega County while in the neighboring counties of Vihiga and Bungoma, the uptake was at 18% and 11% respectively. In 2014, there was an increase in the uptake across the counties to 18% in Kakamega County and Bungoma County and 25% in Vihiga County. Kakamega County being the second most populous county in Kenya after Nairobi County (KNBS, 2010), greatly contributes to the national health indicators. A positive shift in the county indicators, will also contribute to the improvement of the national maternal health indicators including the contraceptive prevalence rate, LARC uptake and maternal and child health.

1.2 Statement of the Problem

Kenya is characterized by a high rate of unintended pregnancy. The 2009 Kenya Demographic and Health Survey indicate that 43% of all pregnancies were unintended (KNBS, 2010). These unintended pregnancies have negative consequences on the health and wellbeing of women and their families as they could lead to abortions. In addition, its documented that children born from unintended pregnancies are less likely to be breastfed, more likely to be stunted lack parental love and have a higher risk of child mortality than children from wanted pregnancies (Hubacher *et al.*, 2008).

Previous studies have indicated that some of the reason for unintended pregnancies include contraceptive failure, poor use of short term methods and non-use of modern contraception (Hubacher *et al.*, 2008). Most if not all of this reasons could be solved by use of LARC

methods. However, for women using a modern contraceptive method, tendency to use short term methods is higher. Although short term methods are effective in preventing unintended pregnancies, they have been associated with poor individual compliance which often results in contraceptive failure.

In contrast, studies have shown that LARC methods have the highest effectiveness, do not depend on users' adherence or correct use, are cost effective, do not require frequent visits for resupply and are reversible with a rapid return to fertility after removal. Despite this numerous advantages, LARC methods remain underutilized by Kenyan women. The contraceptive prevalence rate in Kenya is 46% with LARC uptake at 3.5%. In Kakamega county, the study area, the contraceptive prevalence rate is comparable to the national figure at 46.5%, LARC uptake is however lower at 2%.

Studies have shown that socio-demographic, reproductive health characteristics and health system factors may influence uptake of LARC in such set-ups. As such, the current study was designed to investigate socio-demographic, reproductive health characteristics and health system factors and their association to uptake of LARC methods among women seeking FP services in Public health facilities in Kakamega County, Kenya.

1.3 Study Objectives

1.3.1 Broad objective

To establish the determinants of the uptake of Long Acting Reversible Contraceptives by women seeking family planning services in public health facilities in Kakamega County, Kenya.

1.3.2 Specific objectives

1. To identify socio-demographic factors influencing the uptake of LARC methods by women seeking family planning services in public health facilities in Kakamega County, Kenya.
2. To establish reproductive health factors influencing the uptake of LARC methods by women seeking family planning services in public health facilities in Kakamega County, Kenya.
3. To assess health system factors influencing the uptake of LARC methods by women seeking family planning services in public health facilities in Kakamega County, Kenya.

1.3.3 Research Questions

1. What are the socio-demographic factors influencing the uptake of LARC methods by women seeking family planning services in public health facilities in Kakamega County, Kenya?
2. What are the reproductive health factors influencing the uptake of LARC methods by women seeking family planning services in public health facilities in Kakamega County, Kenya?
3. What are the health systems factors influencing the uptake of LARC methods by women seeking family planning services in public health facilities in Kakamega County, Kenya?

1.4 Significance of the Study

The family planning program in Kenya under the Division of Family Health within the Ministry of Health is advocating for the LARC methods, in order to limit the occurrence of unintended pregnancy hence improving maternal and child health as per their 2012-2016 FP strategy (MOH, 2012).

Information on the acceptability of LARC is scarce in Kenya although various studies have been done to assess the utilization of modern contraception methods in general. For this reason, the

present study emphasizes determinants of LARC methods, since they are appropriate for developing countries like Kenya, which sees high rates of unintended pregnancy amongst sexually active women.

The aim of the current study was to contribute to better understanding of the determinants of uptake of LARC methods by women.

Understanding the factors associated with LARC use contributes to a better uptake of these methods resulting to fewer unintended pregnancies. Information generated provide decision-making and actions that lead to increased LARC uptake hence reducing the burden of unintended pregnancy caused by failure of short term methods. Increased LARC uptake thus, will subsequently, lead to better child spacing and improved quality of life. For Kenya to attain the demographic dividend, rapid fertility decline must occur. This will allow population growth to slow, and the ratio of working-age adults relative to young people to increase. Improved access to and use of LARC methods is one of the key intervention to address unintended pregnancy and, thereby, high fertility. Information generated from this study will advise the health authorities on the best practices to promote LARC uptake among women in Kakamega County and beyond.

CHAPTER TWO: LITERATURE REVIEW

2.1 The Burden of Unplanned Pregnancy

An unplanned pregnancy is defined as one that is mistimed, unplanned, or unwanted at the time of conception. The burden of unintended pregnancy is high worldwide but it's more acute in Sub Saharan Africa. Every year in sub-Saharan Africa, approximately 14 million unintended pregnancies occur and a sizeable proportion is due to poor use of short-term hormonal methods. If 20% of the 17.6 million women using oral contraceptives or injectables wanted long-term protection and switched to the contraceptive implant, over 1.8 million unintended pregnancies could be averted over a 5-year period (Hubacher *et al.*, 2008). Modern contraceptive use have for a long time been advocated to prevent incidences of unwanted pregnancies. In a previous study conducted in Africa, although the rates of contraceptive use in Kenya were comparably higher than those of most of other African countries, still the rates of unplanned pregnancies are also relatively higher. In addition, Kenya recorded the highest rate of unintended pregnancies (Hubacher *et al.*, 2008). During the period between 1998 and 2012, the rates of mistimed pregnancies reduced considerably however the proportion of those pregnancies that were labelled as unwanted doubled.

Unintended pregnancy often results to women seeking abortion services. Abortion is one of the major causes of maternal mortality and morbidity. Owing to the policy in which abortion is restricted in several countries, most pregnant women procure the services clandestinely which leads to complications that may be life threatening.

In Kenya, unintended pregnancy results in 465,000 women who seek medical care in public health facilities for complications from incomplete or unsafe abortions annually (Hussain, 2012).

The desirability of a pregnancy may also be significantly related to the seeking of appropriate maternal health care and is having desirable pregnancy outcomes. Previous studies have shown that unintended pregnancy is a barrier to early and continuous prenatal care as well as professional delivery care. Women with unintended are less likely than those with planned pregnancies to seek prenatal care during the first trimester (Magadi *et al.*, 2000).

2.2 Significant Attributes of Long-Acting Reversible Contraceptives

Modern contraceptives methods are divided into three: Long acting reversible contraceptive methods (IUCD and Implants); permanent contraceptive methods (sterilization and vasectomy) and short term contraceptives methods (Oral pill, inject-able, male and female condoms, foam tablet and cervical cap). Because of their long lasting protection and reversibility, long acting contraceptives can be used for a couple of years for instance, Implant is effective if inserted within the first five days of the period 9 and it can last for three to five years and IUCD is effective for 12 years (WHO, 2011).

For women using a modern contraceptive method, tendency to use short term methods is high with injectables being the most popular contraceptive. It is well documented that the use of long-acting reversible contraceptive (LARC) methods can reduce rates of unplanned pregnancy and abortion, but for a range of reasons, these methods are underused by women.

Short term contraceptives have lower continuation rates and higher pregnancy rates than LARC methods (Raine *et al.*, 2011). In developing countries, 20 to 30% of women who use oral contraceptives or injectables stop within two years of starting because of side effects or other health concerns. Many of these women could benefit from switching to long term methods (Ali and Cleland, 1999). Previous studies indicate that long acting reversible contraceptives (LARC)

methods, which are cost effective and highly effective in pregnancy prevention, are a possible solution to the problem of unintended pregnancies. Long-acting methods require very little action on the part of the user beyond the initial insertion/operation and are easy to use, resulting in few failures from user error. Because they do not require daily adherence, these methods are shown to be substantially more effective than user-dependent hormonal methods that suffer higher typical use failure rates (Kost *et al.*, 2008; Moreau *et al.*, 2007).

2.3 Socio-Demographic Factors and LARC Uptake

The demographic characteristics such as age, gender, educational status, number of living children and desire for additional children play an important role in determining the use of contraception. In addition, ethnicity, marital status, age, and gender all shape clients' experiences with family planning and reproductive health services.

A study in the United States among women aged between 15 and 44 found a significant increase in LARC methods among women of all ages, race, educational level and income group: from 2.4% in 2002 to 3.7% in 2007, and 8.5% in 2009. The study found that women with one child or two and under the age of 30 had the largest increment in LARC use in the country, which he attributed to provider bias (Finer *et al.*, 2012).

Providers were more likely to encourage LARC use among these women, who would have reached their desired fertility intentions. This supports the argument raised in qualitative studies, that providers with little information on LARC are more likely to discourage their use amongst all women, regardless of their demographic or health status (Dempsey *et al.*, 2012).

Further still, education also influences contraceptive uptake. A nationally representative cross sectional study conducted in the US in 2008 of women aged between 18 and 44, yielded an interesting result. The study found that women with no college education were more likely to use long-acting methods than women with a college education. The authors speculated that women with no college education were more likely to use the long acting methods, because they were cheaply available at public funded health institutions (Frost and Darroch, 2008). This is not in line with findings from two similar studies also conducted in the US. The studies indicated that women with a college education were more likely to use LARC methods due to their increased knowledge on modern contraceptives (Finer *et al.*, 2012; Kavanaugh *et al.*, 2011). A study conducted in Kenya revealed that if the husband lacked schooling but the wife had some higher education, they were 4.3 times likely to use contraceptive compared to uneducated couples. According to the researcher, one interpretation of this result was that in case the wife was better educated than her husband, she might have considerably more household decisions-making (Lasee and Becker, 1997).

There are studies which examined factors influencing the LARC methods separately. A study conducted in the US studied reasons and determinants associated with the intention to use the injectable (short-term) and implant (LARC) among women aged between 20 and 37 using data collected from the 1993 and 1995 National Surveys of Women. It was found that marital status, education, parity and fertility intention were factors that predicted the use of the injectable. Never married women were two times more likely to use the injectable than married women. Women who wanted to have a child in the next two years were more likely to use the injectable than women who did not desire a child (Tanfer *et al.*, 2000). However, this study limited its LARC definition to implants and short term methods to injectables hence leaving out IUDs and

pills which have been identified in the scientific world as LARC and short-term methods, respectively.

Religion has been found to generate mixed influence on modern contraception. According to an article on the cultural context of high fertility in sub Saharan Africa, religion encourages high fertility and low use of modern contraception, due to the strict influence of the Roman Catholic Church and African traditional religion, which were considered as conservative (Caldwell and Caldwell, 1987). However, a more recent study from indicated that it is the attitude of particular congregations towards family planning and sexual morality that influence modern contraception use (Yeatman and Trinitapoli, 2008).

The specific factors that influence contraceptive use include; education, wealth status, residence, religion, type of marriage, knowledge of family planning, desire for more children, number of living children, and death of a child (Stephenson *et al.*, 2007).

In Kenya, evidence from research conducted has provided empirical evidence to support these suggestions. The studies (KNBS, 2010; Magadi and Curtis, 2003) conducted in Kenya are mostly on determinants of contraceptive use and not specifically LARC uptake. The studies have further determined that there is low uptake of LARC methods in Kakamega County. However, the socio-demographic factors influencing the uptake of LARC methods by women in Kakamega County remain unknown. As such, the current study identified the socio-demographic factors influencing the uptake of LARC methods by women seeking family planning services in Kakamega County, Kenya.

2.4 Reproductive Health Factors and LARC Uptake

Desire for more children play a key role in contraception decisions and continuation. For example, having a partner who wants a child within the next 2 years has been significantly associated with early implant discontinuation (Kalmuss *et al.*, 1996). In a previous study conducted in North West Ethiopia, it was shown that being in older age, having no desire for more child, desire to have a child after 2 years, having ever born children three or more, not ever heard of modern family planning, not ever using of modern FP, having no spousal discussion in the past six month about contraception, having no spousal discussion about which method to use and having perception of their husbands' approval of using permanent methods after completing desired family size were significantly associated with having higher demand for LAPMs (Bulto *et al.*, 2014).

Studies carried out in the United States (Frost and Darroch, 2008; Kavanaugh *et al.*, 2011; Whitaker *et al.*, 2008) found that “not trying for pregnancy at time of conception” and no desire for another pregnancy within 2 years to be factors associated with LARC use among postpartum women in the United States. In other studies, parity (Frost and Darroch, 2008; Shah *et al.*, 1998), desired family size, women with an early birth, previous history of abortion (Dempsey *et al.*, 2012), women who had ever experienced an unwanted pregnancy, (Eeckhaut *et al.*, 2014), women who had visited a clinic in the past year for family planning services, (Bharadwaj *et al.*, 2012) to be the reproductive health factors associated with LARC use. Another study conducted in a teaching Hospital in Kumasi, Ghana interviewed 5946 women who opted for LARC methods. The study reported that LARCs were employed mainly by women with more living children, who had previously used LARCs (Dassah *et al.*, 2013). However, majority of these studies that discuss reproductive health factors associated with LARC use have been carried out

in developed countries. In addition, these studies fail to look at women in general, only focusing on certain women population subsets as postpartum women, adolescents. In Kakamega County, it has been shown that there is low LARC uptake. However, it remains unclear whether the low uptake in Kakamega County is as a result of reproductive health factors influencing LARC uptake. As such, the current study sought to establish the reproductive health factors influencing the uptake of LARC methods by women seeking FP services in Kakamega County, Kenya.

2.5 Health Care System Factors and LARC Uptake

Previous studies have shown that misperceptions about IUDs are common among both patients and providers. Patients are frequently unaware of LARC, and are often unfamiliar with the safety and efficacy of these methods. Both health care providers and patients have misperceptions regarding IUDs safety, particularly the risk of infection and infertility, and are unable to identify appropriate candidates for LARC methods (Whitaker *et al.*, 2008). Several qualitative studies have shown a gap in knowledge on LARC in regards to its usage.

A qualitative study conducted in a Midwestern state in the United States to explore women's knowledge and perception on LARC among women aged 18 to 30 revealed that the respondents believed that LARC methods were for older women, who had reached their desired family size. The respondents said they could not afford the expense of these methods, particularly when it came to the implant and IUD (Spies *et al.*, 2010). In another study conducted in Mori, Pacific Island, thirty women aged 16–25 were recruited at a public hospital abortion clinic to participate in a semi-structured interview. Participants were asked about their views on LARC methods. After using thematic content analysis to investigate reasons of non-use of the LARC method among young women aged between 16 and 25 seeking abortion services, it was reported the fear

of side effects as well as a concern over whether the method contained hormones or not, as some of the reasons cited for non-use (Rose *et al.*, 2011).

Though very important in the study of LARC methods, qualitative studies fail to bring out the determinants associated with LARC use. Rather, the qualitative studies highlight knowledge and attitude towards LARC use. Additionally, they lack generalization to all women of reproductive age in the country of study. Generally, qualitative studies have small sample sizes. For example, (Rose *et al.*, 2011) studied 30 participants aged between 16 and 25 years old who had experienced an abortion hence the findings may not be generalized to the overall women of reproductive age population.

Further studies have stressed the continual need to educate providers on the appropriateness of LARC methods for their clients, since the providers have been identified as one of the main reasons why women do not know about or use LARC methods (Dempsey *et al.*, 2012; Haimovich, 2009).

Another study in the United States among women aged between 15 and 44 found a significant increase in LARC methods among women of all ages, race, educational level and income group: from 2.4% in 2002 to 3.7% in 2007, and 8.5% in 2009. The study found that women with one child or two and under the age of 30 had the largest increment in LARC use in the country, which he attributed to provider bias. Providers were more likely to encourage LARC use among these women, who would have reached their desired fertility intentions (Finer *et al.*, 2012). This supports the argument raised in qualitative studies, that providers with little information on LARC are more likely to discourage their use amongst all women, regardless of their demographic or health status (Dempsey *et al.*, 2012).

The finding of this study is further collaborated in another qualitative study that was conducted in Tanzania among health care workers offering FP services. The study reported that found out that eligibility barriers include prohibitions on the use of a family planning method based on age, parity, marital status and spousal consent. For example, some providers may consider it inappropriate to provide an IUD to a woman who has no children, even if she is not at risk of acquiring an STD. There is no medical justification for limiting any method on the basis of these characteristics, assuming that appropriate counseling is provided (Speizer *et al.*, 2000).

One major limitation to the provision of LARC, specifically IUD, is the lack of education and persistence of inaccurate knowledge. A study that was conducted to assess women's knowledge of and attitudes toward intrauterine devices (IUDs) before and after a brief educational intervention found out some of the patient barriers include a general lack of awareness of LARC methods and their safety and effectiveness. In that study, young women were likely to report a positive attitude about intrauterine contraception after a brief, 3-minute educational intervention (Whitaker *et al.*, 2008). In addition, lack of accurate knowledge about what can be perceived as alternative methods of contraception can also influence the likelihood that LARCs may be overlooked or refused (Rose *et al.*, 2011). A study conducted in Europe to explore the health care provider (HCP), health system and user issues that prevent more widespread use of IUCs, particularly among nulliparous women concluded that addressing health care provider lack of knowledge, training and confidence with IUC insertions, particularly in nulliparous women, could make a substantial positive impact on IUC utilization (Black *et al.*, 2012).

Moreover, factors such as the persistence of outdated information about side effects and patient suitability, lack of skills and training for health professionals and the high upfront cost of

intrauterine devices (IUDs) and implants to women are likely to have contributed to low utilization (Harper *et al.*, 2009).

According to a study conducted in 4 sub-Saharan Africa countries, inadequate knowledge about contraception and how to obtain health services is one of the reasons why many adolescent women in developing countries are especially vulnerable (Bankole *et al.*, 2007). Inadequate knowledge about contraception brings fears, rumors, and myths about family planning methods and can prevent young people from seeking contraception (Jejeebhoy *et al.*, 2005). Additional obstacles to effective use of contraception include financial and procedural barriers. Previous studies have found a reduction of the financial barrier is associated with increased use of IUD. Providing complete insurance coverage for the most effective forms of contraception has been shown to increase IUC use substantially (Postlethwaite *et al.*, 2007). The upfront costs of some methods such as long-acting reversible contraceptives (LARCs), make them inaccessible to many women today, yet LARCs are even more cost effective than other methods in the long-term and are nearly 100 percent effective (Blumenthal *et al.*, 2011). Research shows that some family planning providers still restrict access to contraceptives based on age or marital status (Speizer *et al.*, 2000).

A study conducted in Kenya concluded that to increase use of LARC methods, barriers such as lack of health care provider knowledge or skills, low patient awareness, and high upfront costs should be addressed. The study further suggested that lack of experience or comfort with implant or IUD insertion may result in physician reluctance to recommend LARC methods, and overly cumbersome insertion protocols, multiple visits, and unnecessary testing could discourage patient use (Peipert *et al.*, 2012). The above studies that have focused on health system factors

are qualitative in nature and also they have been carried out in developed countries. In Kakamega County, Kenya, what remains unclear is whether the health system factors influence LARC uptake. As such, the current study established the health system factors influencing the uptake of LARC methods by women seeking FP services in Kakamega County, Kenya.

2.6 Theoretical Framework

Various models have tried to explain what motivates an individual to change their attitude. The transtheoretical model argues that for a change to occur, an individual has to go through five distinct stages as identified in the stages of change construct: pre-contemplation (not ready), contemplation (getting road), decision (ready), action and maintenance (Prochaska, 1997). However, this is a circular and not linear model since people don't go through the stages and graduate but they can enter and exit or have a relapse at any particular point hence it not best suited for influencing a woman's choice of contraceptive method.

Another theory is the social cognitive theory by Bandura. It explains behavior in terms of triadic reciprocity ("reciprocal determinism") in which behavior, cognitive and other interpersonal factors, and environmental events all operate as interacting determinants of one another. One of the key concepts in SCT is the environmental variable: observational learning. The social cognitive theory views the environment as not just a variable that reinforces or punishes behaviors, but one that also provides a milieu where an individual can watch the actions of others and learn the consequences of those behaviors (Bandura, 1986). This model is not the best fit for the current study since whereas women's perception on contraceptive use can be based on the actions of fellow women, the consequence for short term method uptake might not be

pronounced, since unintended pregnancy can result from misuse, non-adherence of the short term methods which might not be obvious for other women to see.

The current study adopted the health-protective theory which has its roots in the health belief model since it provided the best fit for the study. Health belief was a psychological model developed by Rosenstock in 1966 for studying and prompting the uptake of services offered by social psychologists (Rosenstock, 1966). The model was furthered by Becker in 1970s and 1980s. Subsequent amendments were made in 1988 to accommodate evolving evidence generated within the community about the role knowledge and perceptions play in personal responsibility (Glanz *et al.*, 2002).

Originally, this model was designed to predict behavioral responses to treatment received by acutely or chronically ill patients, but in more recent years, the model has been used to predict more general behavior (Ogden, 2007). The original health belief model constructed by Rosenstock, 1966, was based on core beliefs of individuals, based on their perceptions, for example: perceived susceptibility; perceived severity; and perceived benefit. Constructs of mediating factors were later added to connect the various perceptions with the predicted health behavior: Cues to action; health motivation; and perceived threat. The prediction of this model is the likelihood of the individual to undertake recommended health action such as preventive and curative health actions. The study adopted this theory since people's perception on contraceptive services determines their uptake of services. Individuals' perception of severity, susceptibility, cost and benefits to adopting a new practice or behaviors can influence acceptance of services. The decision to choose LARC methods as opposed to the other short term methods is based on whether an individual perceives the method to be beneficial as compared to short term methods.

2.7 Conceptual Framework

Uptake of modern contraceptives among women is believed to be influenced by a complex interaction of many independent, proximate and dependent factors at individual, social and health service delivery levels. In this study and based on literature, the socio-demographic, reproductive health and health system factors are considered the independent factors which may influence either uptake of LARC methods or other methods as shown in figure 2.1.

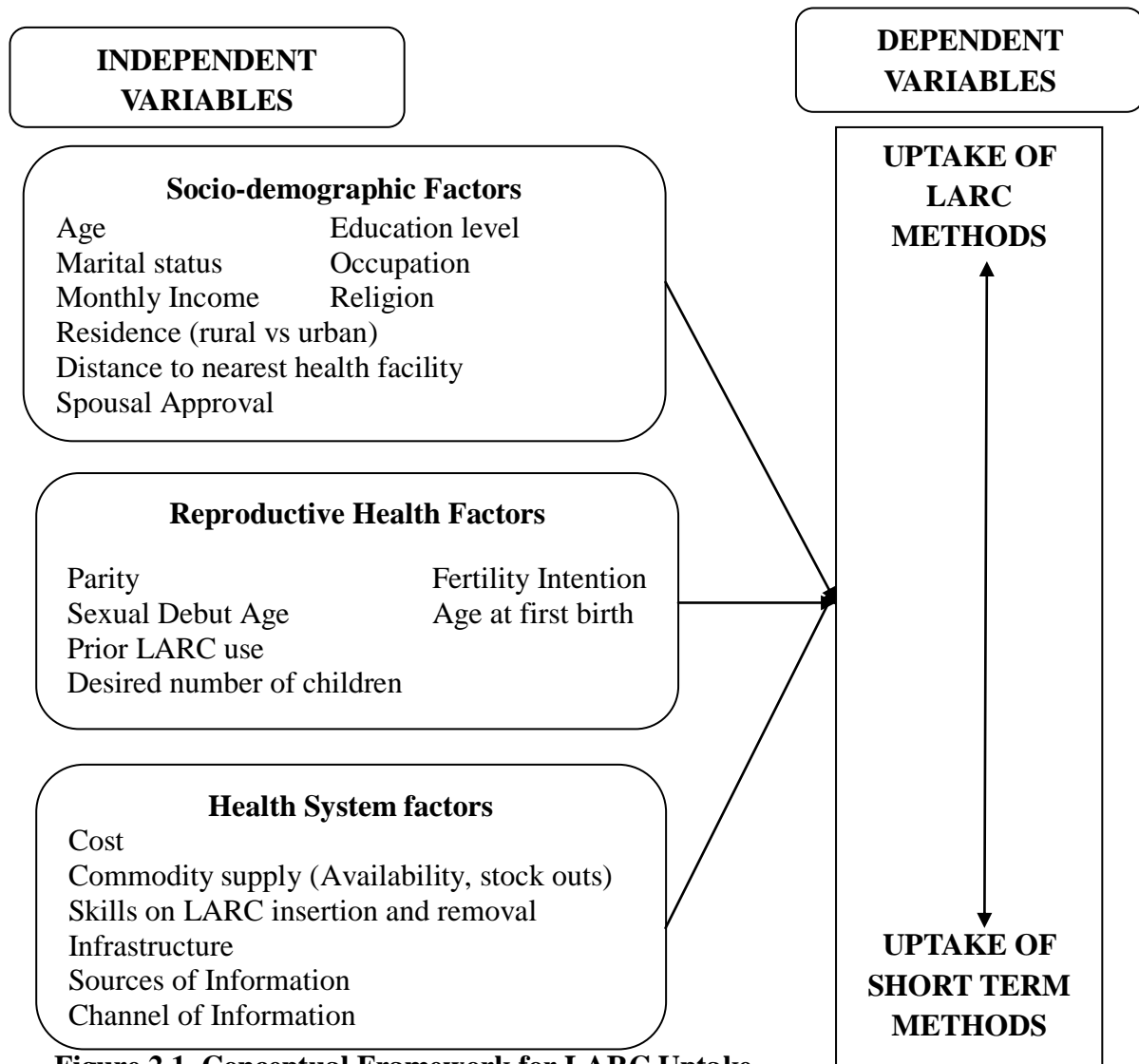


Figure 2.1. Conceptual Framework for LARC Uptake

CHAPTER THREE: METHODOLOGY

3.1 Study Area

The study was conducted in public health facilities in Kakamega County (Figure 3.1). Kakamega County is one of the four counties making up the defunct Western Province in Kenya. It is bordered by Busia, Siaya and Bungoma counties to the West, Nandi and Uasin Gishu counties to the East, Trans-Nzoia County to the North and Vihiga County to the south. The County lies between longitudes 34, 20' and 35 E and latitudes 0 15' and 1N of the equator. The total area of Kakamega County is 3,020 sq. Km and has been rated as the 2nd largest county after Nairobi County (KNBS, 2010).

In 2009, the national housing and population census recorded that the county had a total population of 1,660,651 (Male- 48%, Female- 52%) and 398,709 households. It is the second most populous county in Kenya. Women of reproductive age form 35% of the county population. The county has a population density of 515 people per Km² and is the 7th most densely populated county in Kenya. The population growth rate of Kakamega County is 2.5% and fertility rate is 5.6% which is higher than the national average of 4.6% (KNBS, 2010).

The county is divided into 12 sub-counties (Malava, Lugari, Mumias West, Mumias East, Matungu, Lurambi, Shinyalu, Ikolomani, Butere, Likuyani, Navakholo and Khwisero). According to Division of Health Information of the Ministry of Health, Kakamega County has a total of 134 public health facilities distributed as follows: 1 County Referral Hospital, 11 Hospitals, 37 Health Centres and 85 Dispensaries.

3.2 Study Design

The study was a health facility-based cross-sectional study based on multi-stage and Probability Proportional to Size (PPS) method (Kombo and Tromp, 2006; Oso and Onen, 2005). The study was conducted in public health facilities and targeted women receiving services and health care providers offering FP services in the family planning clinic. The study adopted a client exit interview approach at the family planning clinic.

3.3 Study Population

The study participants were women of reproductive age (18-49 years) attending family planning clinic in public health facilities in Kakamega County. The study sampled one public health facility (Figure 3.1) per sub-county that was selected based on its highest catchment population. In addition, one health care provider per sampled facility was purposively selected.

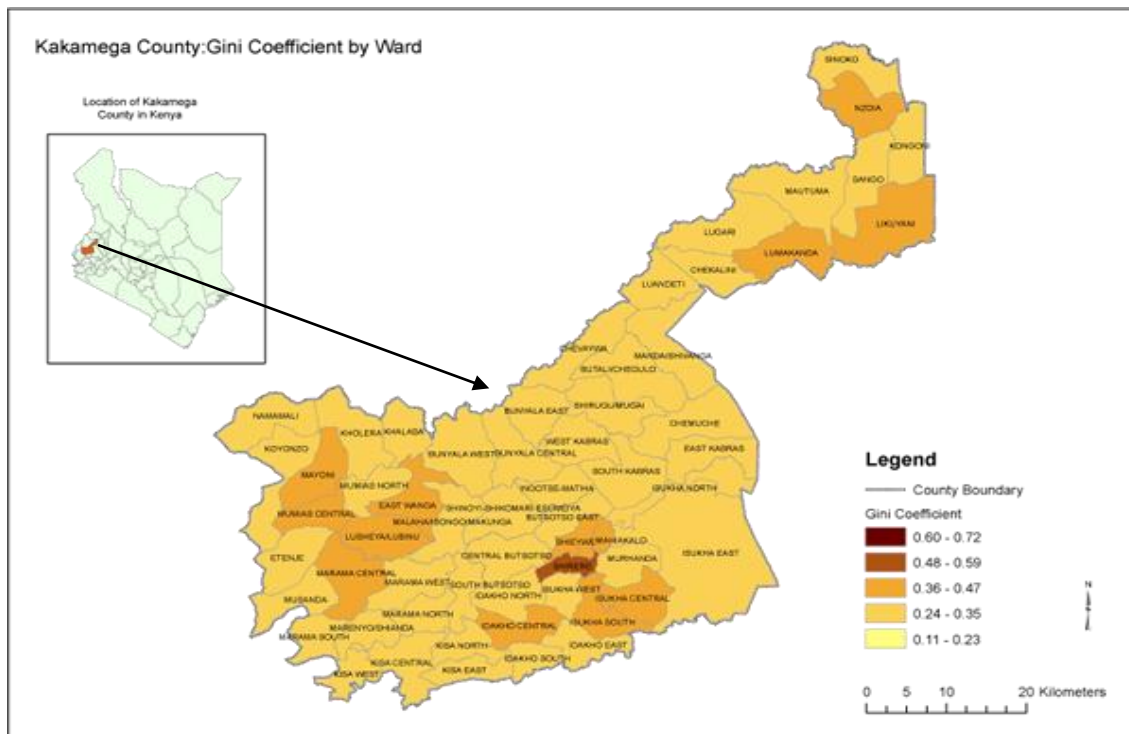


Figure 3.1. Map of Kakamega County showing the administrative boundaries

3.3.1 Inclusion criteria

1. Women of reproductive age group (18-49 years) residing in Kakamega County for the last 6 months and visiting the family planning clinic.
2. Those who consented to be interviewed.
3. Those who chose either pills, injectable, IUDs and implants.

3.3.2 Exclusion criteria

1. Unwillingness to give informed consent to participate in the study.
2. Women who report to have received emergency contraception, condoms and permanent contraceptive methods.

3.4 Sample Size Determination and Sampling Procedure

3.4.1 Sample size determination

Fisher's formula (Mugenda and Mugenda, 2003) for sample size determination was used since the study population is greater than 10,000 (the population of women of reproductive age in Kakamega County is 581,227 women).

The sample size used was:

$$n = Z^2 pq/d^2$$

Where,

n = the desired sample size (if the target population is > 10,000).

Z = is the standard normal deviate at the required confidence level.

p = is the proportion in the target population estimated to have characteristics being studied.

$$q = 1-p = 0.5$$

d = the level of statistical significance set = 0.05

Z = Assuming 95% confidence interval Z = 1.96

P = The proportion in the target population was assumed to be 50% since the current prevalence rate of LARC uptake among women seeking family planning in public health facilities,

Kakamega County is not accurately known. The denominator of the known proportion of 2.0% includes even women who are not using a contraceptive method. In this study, the focus is only on women who chose a method, hence the denominator is different

So $p = 0.5$

$$n = 1.96^2 (0.5) (0.5) / 0.05^2 = 384$$

10% of this was added to the sample size to account for non-response, thus bringing the total sample size to **422** women of reproductive age (18-49 years).

3.4.2 Sampling design

A multistage stratified sampling technique was used to ensure homogenous sample whose results could be generalized to the whole county. The sampling frame for the facility based survey was comprised of the sub-county administrative units where the facilities are located. Only public health facilities were considered.

First, the County was stratified according to sub-counties. Kakamega County has 12 sub-counties. One facility was purposively selected from each sub-county based on the highest catchment area that the facility serves as per the MOH records. Thus, a total of 12 health facilities were sampled. The sample size per health facility in each sub-county was estimated by the average 2014 contraceptive caseload as per the MOH Health Information System (HIS) records as shown in the table 3.1. At the family planning clinic, systematic random sampling was used to select the clients to be interviewed. The sampling interval was calculated for each facility based on the daily family planning caseload and the facility sample size. FP providers were selected purposively, one in each of the 12 sampled facilities. Data collection occurred concurrently in the 12 sites.

Table 3.1. Sample size by health facility

Sub-County	Health facility	2014 Contraceptive Caseload	Sample Size to Proportion	Sample size
1. Lurambi	Kakamega County Hospital	6,225	$6,225/33,372*100 = 18.7\%$	79
2. Malava	Malava Sub-county Hospital	4,238	$4,238/33,372*100 = 12.7\%$	54
3. Butere	Butere Sub-county Hospital	4,216	$4,216/33,372*100 = 12.6\%$	53
4. Likuyani	Likuyani Sub-county Hospital	3,382	$3,382/33,372*100 = 10.1\%$	43
5. Navakholo	Navakholo Sub-county Hospital	2,441	$2,441/33,372*100 = 7.3\%$	31
6. Khwisero	Khwisero Health Centre	2,168	$2,168/33,372*100 = 6.5\%$	27
7. Mumias West	Mumias Model health Centre	2,102	$2,102/33,372*100 = 6.3\%$	27
8. Ikolomani	Iguhu Sub-county Hospital	2,061	$2,061/33,371*100 = 6.2\%$	26
9. Matungu	Matungu Sub-county Hospital	1,930	$1,930/33,372*100 = 5.8\%$	24
10. Mumias East	Makunga Health Centre	1,887	$1,887/33,372*100 = 5.7\%$	24
11. Lugari	Lumakanda sub-county Hospital	1,462	$1,462/33,372*100 = 4.4\%$	18
12. Shinyalu	Shinyalu Health Centre	1,260	$1,260/33,372*100 = 3.8\%$	17
Total		33,372	100%	423

3.5 Data Collection

3.5.1 Pre-testing of the questionnaires

Prior to main study, pre-testing of the questionnaires was conducted in Vihiga County hospital which was selected due to its close proximity and similarities to facilities in Kakamega County. A total of 42 respondents (10% of the main study sample) were sampled. To test the validity of the questionnaire, the study participants were asked for feedback to identify ambiguities and difficult questions.

All unnecessary, difficult or ambiguous questions were discarded. The time taken to complete the questionnaire was recorded. It was estimated that 20 minutes was needed to answer all the questions and this was deemed reasonable. In addition, question was assessed whether it gives an adequate range of responses.

Reliability of the study tools was ascertained by use of test-retest method to determine whether the questionnaire consistently gives the same results. The questionnaire for the FP clients was administered to 40 women who had come to seek family planning services as new clients. The tool was again administered to 25 of those women who came back to the facility in a weeks' time for follow up with the providers. The difference between first and second scores of the 25 women were calculated, yielding a correlation coefficient value of 0.83 was obtained that led to the conclusion that there was no significant difference, hence the tool was termed reliable.

3.5.2 Main study data collection

Data from women seeking FP service was collected using structured questionnaires which were interviewer-administered (Appendix 1). A total of 423 respondents were interviewed from the various facilities as shown in the Table 3.1 below. In addition, interviews were conducted with 12 health care providers, one from each of the 12 sampled sites. Data from health care providers was collected using a structured questionnaire that included some open ended questions (Appendix 2).

3.6 Data Management and Analysis

Filled questionnaire were checked for completeness and thereafter coded. The questionnaires were entered using Epi-data software and analysed using STATA version 13. The Mann-Whitney U test was used to test for differences in age at first birth. Chi-square tests were used to

determine the proportions. Logistic regression analyses was used to identify the determinants influencing the uptake of LARC and estimated odds ratio was used to establish the strength of association between the variables and the uptake of LARC. P-values ≤ 0.05 were considered statistically significant.

3.7 Ethical Considerations

Scientific approval for the study was sought from the Maseno University School of Graduate Studies (SGS) (Appendix 3). Ethical clearance was sought from Maseno University Ethical Review Committee (Appendix 4). The County Director of Health of Kakamega County was briefed of the study and he provided permission (Appendix 5). In carrying out the study, informed consent was sought with full information being provided and comprehension being affirmed (Appendix 6). Confidentiality was ensured through anonymity (using unique numbers); privacy during interviews and withdrawal at any point was allowed.

3.8 Study Limitations and Potential Biases

Since this study is cross-sectional in nature, it cannot infer causality, in that the selected independent variables cause women to use LARC methods. Rather, the study can only infer that the selected independent variables are associated with a higher incidence of LARC method use in the study sample, which is exposed to the independent variables.

CHAPTER FOUR: RESULTS

A total of 423 respondents were interviewed in this study. A total of 87 (20.6%) women who were interviewed chose Long Acting and Reversible Contraceptives (Implant 16.8%; IUD 3.8%) while 336 (79.4%) chose Short term methods (Injectables 59.8%; Pills 19.6%) as shown in figure 4.1 below:

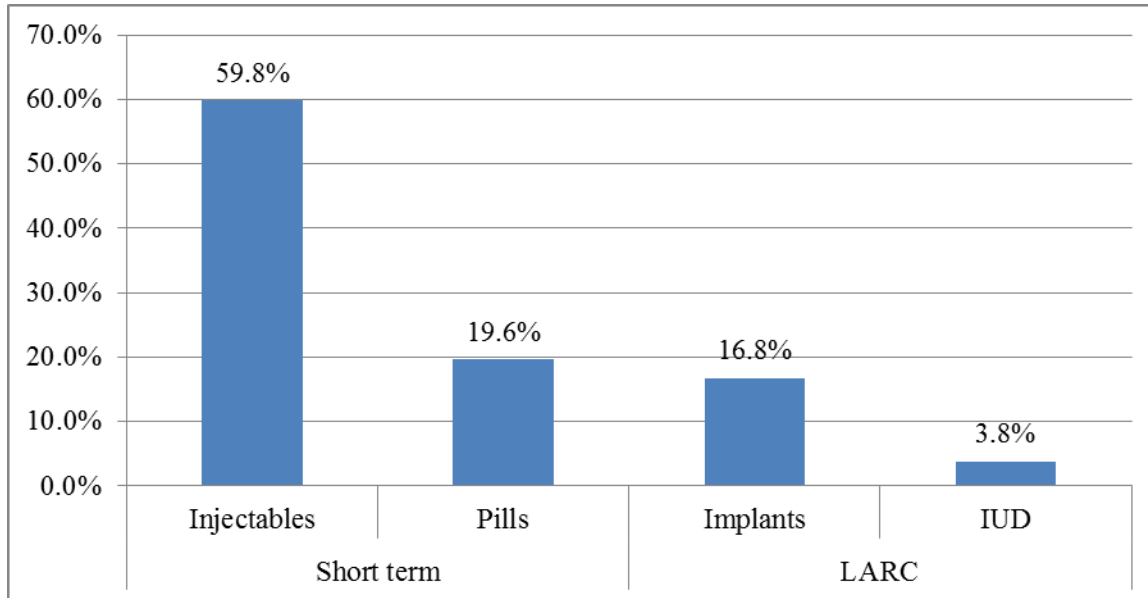


Figure 4.1. Contraceptive uptake of respondents

4.1 Socio-demographic characteristics and LARC uptake

Table 4.1 below presents the socio-demographic characteristics of the respondents in relation to LARC uptake. Age was statistically significant different ($P=0.003$) between the two groups (LARC versus short term method) of respondents. Those who chose LARC ($M=29.0$, $SD=11$) were generally older than those who took short term methods ($M=26.0$, $SD=10.0$). An additional chi-square test demonstrated that marital status ($P=0.001$), education level ($P=0.008$), religion ($P=0.044$) and occupation ($P=0.027$) significantly differed between those who choose LARC and short term methods.

However, the proportions of those in the different categories of residence ($P=0.076$), monthly income ($P=0.322$), spousal approval ($P=0.753$) and distance to nearest health facility ($P=0.920$) were similar between LARC uptake and short term method uptake (Table 4.1).

Table 4.1 Socio-demographic characteristics of respondents

Variable		LARC uptake n=87	Short term method uptake n=336	n	P value
Age	15-24	17(11.9)	126(88.1)	143	0.003 ¹
	25-34	43(23.0)	144(77.0)	187	
	35+	27(29.1)	66(70.9)	93	
Marital Status	Married	75(24.5)	231(75.5)	306	0.001 ¹
	Not Married	12(10.3)	105(89.7)	117	
Education Level	None/Primary	27(14.2)	163(85.8)	190	0.008 ¹
	Secondary	41(24.1)	129(75.8)	170	
	Tertiary	19(30.2)	44(69.8)	63	
Religion	None	1(20.0)	4(80.0)	5	0.044 ²
	Muslim	10(25.0)	30(75.0)	40	
	Catholic	34(28.1)	87(71.9)	121	
	Protestant	42(16.3)	215(83.7)	257	
Residence	Urban	25(27.2)	67(72.8)	92	0.076 ¹
	Rural	62(18.7)	269(81.3)	331	
Occupation	Not Working	24(14.3)	144(85.7)	168	0.027 ¹
	Casual/Business	20(20.0)	80(80)	100	
	Farming	34(27.0)	92(73.0)	126	
	Paid Employment	9(31.0)	20(69.0)	29	
Monthly Income (kshs)	≤10,000	65(19.1)	275(80.9)	340	0.322 ¹
	10,001-20,000	17(27.0)	46(73.0)	63	
	≥20,001	5(25.0)	15(75.0)	20	
Distance to nearest health facility	Short term method	M(CI)	2.5(2.3-2.8)	333	0.920 ³
	LARC uptake	M(CI)	2.3(2.0-3.0)	86	
Spousal Approval	Yes	67(20.2)	264(79.8)	331	0.753 ¹
	No	20(21.7)	72(78.3)	92	

Data are numbers and those in brackets are proportions; ¹Statistical significance determined by chi square test; ²Statistical significance determined by Fishers exact test ³Statistical significance determined by t test; Values in bold are statistically significant at $P\leq 0.05$. M=Mean. CI=Confidence Interval. SD=Standard Deviation

Further logistic regression analysis demonstrated that relative to respondents aged 15-24 years, those who were 35 years and older had a higher likelihood of choosing LARC (OR, 2.27, 95% CI, 1.09-4.70, $P=0.02$, Table 4.2). Similarly, respondents who were married were more likely to choose LARC (OR, 2.82, 95% CI, 1.41-5.62, $P=0.003$, Table 4.2) as compared to those who were not married. Increase in the level of education was significantly associated with LARC uptake, relative to respondents with primary/none level of education, those who had secondary (OR, 2.05, 95% CI, 1.15-3.64, $P=0.015$, Table 4.2) and tertiary education (OR, 2.68, 95% CI, 1.18-6.09, $P=0.018$, Table 4.2) had a higher likelihood of choosing LARC.

However, being 15-24 years ($P=0.1012$), being a Muslim ($P=0.338$), or having no religion ($P=0.891$), being a casual ($P=0.903$), farmer ($P=0.387$), having paid employment ($P=0.79$) were not associated with LARC uptake as shown in Table 4.2.

Table 4.2. Association between socio-demographic factors and LARC uptake

Variables in the model		Odds Ratio	[95% Conf. Interval]	P-value
Age	15-24	1	N/A	N/A
	25-34	1.72	0.90-3.27	0.101
	35+	2.27	1.09-4.70	0.028
Marital Status	Married	2.82	1.41-5.62	0.003
	Not Married	1	N/A	N/A
Education level	Primary/None	1	N/A	N/A
	Secondary	2.05	1.15-3.64	0.015
	Tertiary	2.68	1.18-6.09	0.018
Religion	Muslim	0.74	0.31-1.75	0.338
	Protestant	0.48	0.28-0.83	0.008
	None	1.18	0.10-13.37	0.891
	Catholic	1	N/A	N/A
Occupation	Casual/Business	0.95	0.46-1.99	0.903
	Farming	1.33	0.70-2.53	0.387
	Paid Employment	1.17	0.39-3.46	0.78
	Not working	1	N/A	N/A

Odds ratio (OR) and 95% Confidence Interval (CI) were generated using logistic regression. Reference group in each category was selected based on the category with the least probability as per the literature review.

4.2 Reproductive Health Characteristics and LARC uptake

Prior to determining the associations between reproductive health characteristics and likelihood of choosing LARC method, chi-square analyses between different reproductive health characteristics against those who chose LARC and short term methods was performed as presented in Table 4.3 below.

Results revealed that the sexual debut age of women who chose LARC methods was significantly higher ($P=0.036$, Table 4.3) than those who chose short term methods. Number of living children was significantly associated with uptake of a contraceptive method ($P=0.016$; Table 4.3). Those who choose LARC had a higher parity as compared to those who chose short term methods ($P=0.039$, Table 4.3). An additional t-test demonstrated that the age at first birth was significantly associated with contraceptive method uptake as women who chose LARC methods were older when they first gave birth as compared to those who chose short term methods ($P=0.001$, Table 4.3). There was a significant association between fertility intention with uptake of a contraceptive method ($P=0.003$; Table 4.3). In terms of fertility intention, a higher proportion of respondents who chose LARC did not want any more children (31.9%, Table 4.3) with the least being those who were undecided as to whether they wanted a child or not (12.4%, Table 4.3).

However, desired number of children ($P=0.352$), perceived side effects ($P=0.818$) and ever given birth ($P=0.862$) were comparable between respondents who chose LARC methods and short term methods (Table 4.3).

Table 4.3. Reproductive health factors of respondents

Variables		Uptake of LARC n=87	Short term method uptake n=336	n	P-value
Sexual debut age (years)	≤19	52(17.8)	240(82.2)	292	0.036¹
	≥20	35(26.7)	96(73.3)	131	
Parity	0	5(15.6)	27(84.4)	32	0.039¹
	1	13(11.9)	96(88.1)	109	
	2-3	42(23.5)	137(76.5)	179	
	4+	27(26.2)	76(73.8)	103	
Desired number of children	1-2	19(16.1)	99(83.9)	118	0.352 ¹
	3-4	50(22.7)	170(77.3)	220	
	5+	18(21.2)	67(78.8)	85	
Ever Given birth	Yes	81(93.1)	311(92.6)	392	0.862 ¹
	No	6(6.9)	25(7.4)	31	
Fertility Intention	No more children	36(31.9)	77(68.1)	113	0.003¹
	Wants in 2 years	7(12.5)	49(87.5)	56	
	Wants after 2 years	26(22.4)	90(77.6)	116	
	Wants but unsure of timing	6(14.6)	35(85.4)	41	
	Undecided	12(12.4)	85(87.6)	97	
Age at first birth M(SD)		20.7(3.1)	19.5(3.0)		
Perceived Side Effects	Yes	78(20.4)	304(79.6)	382	0.818 ¹
	No	9(22.0)	32(78.0)	41	

Data are numbers and those in brackets are proportions. ¹Statistical significance determined by chi square analysis; Values in bold are statistically significant at $P \leq 0.05$; M=Mean; SD=Standard Deviation.

Further logistic regression analysis demonstrated that as age at first birth increases by one year, the odds of choosing a LARC method increases by 1.14 (OR, 1.14, 95% CI, 1.04-1.26, $P=0.004$, Table 4.4). On fertility intention, women who didn't want any more children were 2.73 times more likely to choose LARC methods as compared to women who were undecided (OR, 2.71, 95% CI, 1.21-6.07, $P=0.015$, Table 4.4). However, sexual debut age ($P=0.703$, Table 4.4), parity ($P=0.335$, Table 4.4), wanted children in 2 years ($P=0.860$, Table 4.4), wanted children after 2 years ($P=0.154$, Table 4.4), wanted children but unsure of timing ($P=0.749$, Table 4.4) were not associated with LARC uptake.

Table 4.4. Association between reproductive health factors and LARC uptake

Variables in the model		Odds Ratio	[95% Conf. Interval]	P-value
Sexual Debut Age (years)	≤19	1	N/A	N/A
	20+	0.89	0.48-1.63	0.703
Fertility Intention	No more Children	2.73	1.22-6.12	0.015
	Wants in 2 years	1.1	0.38-3.12	0.860
	Wants after 2 years	1.82	0.80-4.16	0.154
	Wants but unsure of timing	1.2	0.39-3.67	0.749
	Undecided	1	N/A	N/A
Age at first birth		1.14	1.04-1.26	0.004
Parity		1.09	0.91-1.31	0.335

Odds ratio (OR) and 95% Confidence Interval (CI) were generated using logistic regression. Reference group in each category was selected based on the category with the least probability as per the literature review.

4.3 Health Care System Factors and LARC uptake

Table 4.5 presents data on the health care system factors and uptake of LARC methods. There was a significant association between family planning cost and uptake of contraceptive methods ($P<0.001$; Table 4.5). Among the respondents who paid for the contraceptive, a proportion of (46.7%) chose LARC method. Duration of family planning use was significantly associated with uptake of contraceptive methods ($P=0.004$, Table 4.5). Source of information was also significantly associated with LARC uptake ($P=0.002$, Table 4.5), with 23.8% of the respondents who chose LARC indicating that they had heard about it from formal network (health care providers and CHWs). A higher proportion of those who chose LARC had been counselled on Implants (53.7%) and IUD (41.0%) by the providers prior to selecting a method.

Table 4.5. Health care system interaction factors with respondents

Characteristic		LARC uptake n=87	Short term method uptake n=336	Total	P
Family Planning cost	Free	73(18.6)	320(81.4)	393	≤0.0001²
	Paid	14(46.7)	16(53.3)	30	
Duration of FP Use	Yes	23(32.9)	47(67.1)	70	0.004²
	No	64(18.1)	289(81.9)	353	
Source of LARC information	Informal Network	8(8.8)	83(91.2)	90	0.002²
	Formal Network	79(23.8)	253(76.2)	330	
Clients who received contraceptive method counselling by provider	Pills	1 (1.6)	60(98.4)	61	≤0.0001³
	Injectables	3(1.5)	196(98.5)	199	≤0.0001³
	Implants	66(53.7)	57(46.3)	123	≤0.0001
	IUD	16(41.0)	23(59.0)	39	0.001

Data are numbers and those in brackets are proportions.²Statistical significance determined by Chi-square analysis; ³Statistical significance determined by Fishers analysis; Values in bold are statistically significant at $P\leq0.05$. FP=Family Planning; LARC=Long Acting and Reversible Contraceptive; IUD=Intra Uterine Device.

Further logistic regression analysis demonstrated that women who paid for a contraceptive method were more likely to choose a LARC method (OR=1.02, 95% CI, 1.00-2.03, $P=0.001$, Table 4.6) as compared to those who didn't pay. Similarly, women who learnt LARC from a formal network were more likely to choose LARC as compared to those who heard LARC from informal networks (OR=1.82, 95 CI, 1.19-2.79, $P=0.006$, Table 4.6). Women who reported to have been counseled on Implants (OR=23.48, 95 CI, 2.94-187.45, $P=0.003$, Table 4.6) and IUD (OR=10.6, 95 CI, 1.25-90.32, $P=0.03$, Table 4.6) were more likely to choose LARC methods as compared to those who didn't receive any implant counseling. However, counseling of Pills ($P=0.308$, Table 4.6) and Injectables ($P=0.142$, Table 4.6); duration of use ($P=0.874$, Table 4.6) were not associated with LARC uptake.

Table 4.6. Association between health care system factors and LARC uptake

Variables in the model		Odds Ratio	[95% Conf. Interval]	P-value	
FP Cost	Paid	1.02	1.00-1.03	0.001	
	Free	1	N/A	N/A	
Duration of Use	Yes	0.94	0.45-1.97	0.874	
	No	1	N/A	N/A	
Source of Information	Formal Network	1.82	1.19-2.79	0.006	
	Informal Network	1	N/A	N/A	
Contraceptive counselling by provider	Pills	Yes	0.27	0.02-3.39	0.308
		No	1	N/A	N/A
	Injectables	Yes	0.21	0.03-1.70	0.142
		No	1	N/A	N/A
	Implants	Yes	23.48	2.94-187.45	0.003
		No	1	N/A	N/A
	IUD	Yes	10.62	1.25-90.32	0.031
		No	1	N/A	N/A

Odds ratio (OR) and 95% Confidence Interval (CI) were generated using logistic regression. Reference group in each category was selected based on the category with the least probability as per the literature review. IUD=Intra Uterine Device; FP=Family Planning.

Data on other health care system factors was derived from interviews that were conducted with one provider in each of the 12 sampled facilities. Table 4.7 below provides data on health care system factors from the sampled health care providers. All sampled facilities had auditory privacy (100%, Table 4.7), visual privacy (100%, Table 4.7). In terms of availability of contraceptive commodities, all facilities had pills ((100%, Table 4.7)), Injectables (100%, Table 4.7), implants (100%, Table 4.7), IUDs (100%, Table 4.7). Contraceptive commodity stock-outs were rare (41.7%, Table 4.7) and never occurred in (58.3%, Table 4.7) of the sampled facilities. In the sampled facilities, only 75% and 58.3% had IUD insertion and removal equipment respectively (Table 4.7). The mean number of trained providers in the facilities was 5.4 (SD 2.27) while the mean number of providers in the FP clinic was 1.5 (Table 4.7). Only 75% of the facilities provided LARC methods to adolescents and youth (table 4.7). On health outreaches, 75% of the facilities conducted health outreaches out of which 88.9% conducted monthly while the rest 11.1% rarely held outreaches.

Analysis of the open ended questions in the tool administered to health care providers revealed that there were several challenges encountered in LARC provision. Staff shortage was mentioned as a key challenge by all the 12 providers interviewed. In all the sampled facilities there was only one provider stationed at the FP clinic who also was required to provide services at ante-natal care, post-natal, immunization and child welfare clinics. *“A client may come and request for IUD. It takes 20-30 minutes to do comprehensive counseling, cervical cancer screening, and pelvic examination for pelvic inflammatory diseases to ascertain whether they are fit for the method before you insert the IUD. I advise them to take a short term method which takes 5 minutes to provide because I have other clients queueing waiting to be served”*, noted one of the providers.

Lack of adequate comprehensive counseling of contraceptive methods to all clients was also reported by the providers interviewed. A provider stated, *“This is a high caseload facility hence I am unable to provide comprehensive FP counseling to clients who come in. To save time, I always provide the contraceptive method that the client has asked for”*. Due to lack of comprehensive counseling by providers, some women who choose LARC are discouraged by their peers. *“I have noticed some clients who we inserted implants come back after about 1 month for removal. They say they have been advised by other women in the villages that it will harm them. Others say they have been having increased bleeding hence they don’t want the implants”*, reported by two of the providers.

Some sampled facilities lacked a room reserved for provision of FP services. *“The room currently used for FP services is also used for treatment of post-abortion complications (PAC) and for examination of gender based violence (GBV) victims eg rape. Hence, when we receive PAC and GBV clients, the FP clients have to wait since theirs is not an urgent case”*, reported by one of the providers.

Myths and misconceptions were cited to be a barrier on uptake of LARC methods by women. *“When you try to counsel women to take LARC methods, they fear them because they say their husbands normally palpate their arms to feel whether an implant has been inserted. For IUDs they don’t like the fact that it is inserted through the vagina. They prefer depo (injectables) since their partners won’t know”*, reported by one provider. Hence women occasionally come to the facility having already decided on the method they want to take.

Table 4.7. Health care factors in health facilities

Variables		Proportion
Auditory privacy	Yes	12 (100)
Visual privacy	Yes	12 (100)
Availability of contraceptive commodities	Pills	12 (100)
	Injectables	12 (100)
	IUDS	12 (100)
	Implants	12 (100)
Frequency of contraceptive commodity stock outs	Always	0
	Occasionally	0
	Rarely	5(41.7)
	Never	7(58.3)
Availability of adequate IUD insertion equipment	Yes	9(75.0)
	No	3(25.0)
Availability of adequate IUD removal equipment	Yes	7(58.3)
	No	5(41.7)
Availability of adequate implant removal equipment	Yes	3(25.0)
	No	9(75.0)
Number of trained providers on LARC in facility, Mean (SD)		5.4(2.27)
LARC trained providers providing services, Mean (SD)		1.5(0.9)
Provision of LARC methods to adolescents and youths	Yes	9(75.0)
	No	3(25.0)
Provision of LARC methods to all women regardless of parity	Yes	12 (100)
	No	0
Facilities that conduct health outreaches	Yes	9(75.0)
	No	3(25.0)
Frequency of Health outreaches	Monthly	8(88.9)
	Rarely	1(11.1)

Data are numbers and those in brackets are proportions. SD=Standard Deviation. LARC=Long acting and reversible contraceptives.

CHAPTER FIVE: DISCUSSION

The study investigated the determinants (socio-demographic factors, reproductive health factors and health system factors) that influence uptake of LARC (implant and IUD) methods at public health facilities in Kakamega County, Kenya. The previous Kenya Demographic Health Survey (KDHS) report of 2009 showed that LARC prevalence in Kakamega County was only at 2.0% as compared to the national prevalence of 3.5% (KNBS, 2010). However, this has since changed as per the most recent KDHS of 2015 that reported LARC prevalence to have increased to 10.3% nationally while in Kakamega County the prevalence is now at 15.1% (KNBS, 2015). While there has been a remarkable increase in the uptake, short term methods are still more popular despite the fact that LARC has been proven to be the most cost effective method.

In this study, emergency contraceptives, condoms and permanent methods were not considered. Condom use is mostly advocated for dual protection, for prevention of sexual transmitted infection. In addition, it's very difficult to ascertain whether the women who took condoms were actually using the. Emergency contraception use is restricted for only twice a year hence it not considered as a regular contraceptive option for women. Permanent methods like vasectomy and female sterilization are the most effective but should be used as a final option for couples who are not interested in having any more children (WHO, 2010).

5.1 Socio-demographic factors and LARC uptake

The results showed that age was an important predictor of LARC uptake; older women (35 years and above) were two times more likely to choose LARC method as compared to women aged 15-24.

This is congruent with studies done in Ghana (Dassah *et al.*, 2013), Gambia (Bledsoe *et al.*, 1998), Ethiopia (Bulto *et al.*, 2014) and in United States (Kavanaugh *et al.*, 2011). The reason for the age difference could be that older women were having more children and have more desire to limit or space the number of pregnancy than younger's who had none or few children.

Marital status also showed an association with uptake of LARC methods with those who were married or previously married (widowed/separated) having a higher likelihood of choosing LARC methods. This finding is similar to findings by (Magadi and Curtis, 2003) and (Frost and Darroch, 2008). A possible reason for single women being less likely to use LARC methods is that these women usually have less frequent sexual encounters, thus are more likely to use short term methods such as the condoms and pills.

This argument is supported by a study conducted in Kenya which revealed that that those never married, who are usually in unstable relationships, are less likely to use LARC methods, since they prefer condoms which provides protection from sexually-transmitted diseases as well (Magadi and Curtis, 2003).

Education level was not significant in the multivariate analysis. However, in the chi square analysis, level of education was significantly associated with LARC uptake. Women who had higher education were more likely to choose LARC as compared to women with lower education level. This is consistent with studies conducted in the US (Finer *et al.*, 2012; Kavanaugh *et al.*, 2011) and in Kenya (Lasee and Becker, 1997). It can be argued that women of higher education are more likely to use LARC methods because educated women are more likely to be aware of the disadvantages attached to unplanned pregnancies and therefore choose LARC methods, which are highly effective in pregnancy prevention. However, another study carried in the US

(Frost and Darroch, 2008) and in Ghana (Dassah *et al.*, 2013) had different results from the current study as they reported that uneducated women were more likely to use long acting reversible methods than educated women.

The difference in the study findings could be influenced by the fact that in the study that was done in Ghana, the definition of LARC methods included the injectable (Dassah *et al.*, 2013) unlike in the current study where injectables have been categorized as short term methods. In addition, the study from Ghana sampled women from one tertiary hospital in urban Ghana. Hence being an urban setting, the level of education could be evenly distributed among the study participants unlike in the current study where the study set up is a rural area.

Additional study findings showed that religion is associated with uptake of LARC methods. In the multivariate analysis, being a Protestant reduced the odds of choosing a LARC method by half as compared to Catholics.

Religion has been found to generate mixed influence on modern contraception. According to an article on the cultural context of high fertility in sub-Saharan Africa, it is argued that religion encourages high fertility and low use of modern contraception, due to the strict influence of the Roman Catholic Church and African traditional religion, which were considered as conservative (Caldwell and Caldwell, 1987). This argument does not hold in a more recent study from Malawi that indicated that it is the attitude of particular congregations towards family planning and sexual morality that influence modern contraception use (Yeatman and Trinitapoli, 2008). In another study conducted in Ethiopia, it was reported that religion was not significantly associated with the use of implants and IUD in South East Ethiopia (Takele *et al.*, 2012).

5.2 Reproductive Health Factors and LARC uptake

In the current study, results revealed that sexual debut age, number of living children, age at first birth and whose fertility intention was significantly associated with the choice of LARC methods. Further logistic regression analysis demonstrated that with a one year increase of age at first birth, the odds of choosing a LARC method increases by 1.13 times. In addition, those who had no desire for more children were twice likely to choose LARC methods as compared to those who were undecided in regards to the number of children they wanted. The observed results in the current study could be due to the fact that LARC methods offer long term protection against unwanted pregnancies; they are favoured by women who don't want any more children.

Kakamega County just like many other counties in Kenya has a very low uptake of permanent methods like sterilization and vasectomy (KNBS, 2010; KNBS 2015) hence women could probably prefer LARC methods since they offer a longer term protection. In Kenya, there is high unmet need for sterilization, with women who are eligible opting to use LARC method instead (KNBS, 2010; KNBS, 2015). These observations are consistent to a similar study conducted in Ethiopia (Bulto *et al.*, 2014) and in Pakistan (Agha, 2010). LARC methods are considered as important alternatives to permanent methods especially in those countries with lower rate of contraceptive use (WHO *et al.*, 2012). The same argument does apply to number of living children with LARC uptake where those who have more children are more likely to use LARC because of its long term protective effect.

This is however not consistent with a review of studies conducted in nine developed countries where there is a lower LARC uptake among women who don't have a desire to have more

children (Eeckhaut *et al.*, 2014; Kavanaugh *et al.*, 2011). It can, however, be argued that increased number of children in developed countries is associated with low uptake of LARC methods since women opt for permanent methods like sterilization.

5.3 Health System Factors and LARC uptake

The logistic regression analysis showed that cost of the contraceptive method was significantly associated with LARC uptake. Women who paid for the contraceptive method were more likely to have chosen LARC methods. The Ministry of Health, Kenya issued a directive that family planning commodities should not be charged so as to increase the uptake. However, the current study findings shows that some women still had to pay for LARC methods which could possibly have created a barrier to others who couldn't afford it (MOH, 2015). This is supported by previous studies conducted in India that have provided evidence that cost is a barrier towards seeking health care services (Bloom *et al.*, 1999; Griffiths and Stephenson, 2001). In another study, provision of a no-cost contraception has been demonstrated to significantly increase uptake of contraceptive methods especially LARC (Peipert *et al.*, 2012). This is also supported by a study conducted in the United States that showed that specifically, the costs associated with IUDs and Implants hinder the adolescents to access LARC methods (Mestad *et al.*, 2011). LARC methods are generally more expensive as compared to other short term methods.

Women who had heard about LARC from a formal network (health care workers/CHWs) were more likely to choose LARC methods as compared to women who had heard from informal networks (family, friends). From the interviews with the providers, it was evident that comprehensive FP counseling was not being given to all women seeking services. Unfortunately, this gap is filled in by people from informal networks who on most instances lack

accurate information pertaining contraceptive methods. Women are more likely to get accurate information from trained health care workers.

Studies have revealed that a barrier to uptake of LARC is the lack of education and persistence of inaccurate knowledge. A study that was conducted in the United States to assess women's knowledge of and attitudes toward intrauterine devices (IUDs) before and after a brief educational intervention found out some of the patient barriers include a general lack of awareness of LARC methods and their safety and effectiveness, however the young women were likely to report a positive attitude about intrauterine contraception after a brief, 3-minute educational intervention (Whitaker *et al.*, 2008). Findings from interviews with providers showed that there were several myths and misconceptions associated with LARC methods. This finding is corroborated with an author who argues in a book that inadequate knowledge about contraception brings fears, rumors, and myths about family planning methods and can prevent women from seeking contraception (Jejeebhoy *et al.*, 2005).

The current study also showed that the women who chose LARC methods were more likely to have been counseled by the providers offering the FP services on the LARC methods as compared to those who didn't choose the LARC methods. This brings out the role of family planning providers in promoting women to choose LARC methods. A review of studies that had been conducted on strategies to promote uptake of LARC methods concluded that women who are considering use of contraceptive methods should receive comprehensive contraceptive counseling, as women who receive counseling before use demonstrate higher rates of LARC method uptake, satisfaction, continuation and acceptance than those who do not (Blumenthal *et al.*, 2011).

CHAPTER SIX: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Summary of Findings

The aim of the study was to investigate the determinants that influence the uptake of long acting reversible contraceptive (LARC) methods among women seeking family planning services in public health facilities in Kakamega County, Kenya. Even though LARC methods are suitable for all women regardless of their age, marital status, education level, fertility intention or parity, the findings have highlighted the fact that there LARC uptake is significant among women with various characteristics. In addition, the results showed that certain aspects of the health care system like cost, lack of proper counseling act as a barrier to provision and uptake of LARC method by providers and clients respectively.

6.2 Conclusions

1. Being older (35 years and above), being currently or previously married, having secondary or tertiary education level and being a protestant were the significant socio-demographic determinants for LARC uptake.
2. Reproductive health factors associated with LARC uptake include age at first birth and having no desire for more children.
3. Cost, having heard about LARC from a formal network and having received LARC counseling prior to uptake of a method by a health provider significantly increased ones chance of choosing a LARC method.

6.3 Recommendations from the Current Study

From the results, it can be recommended that;

1. There is need to conduct intensive health education in the community to increase awareness on the suitability of LARC methods for all women regardless of the socio-demographic factors like age and marital status.
2. There is need to target women who still desire to space their children and those who had children at a younger age with health messaging aimed at increasing LARC uptake.
3. There is need to address health care system challenges that include shortage of staff and lack of FP infrastructure to ensure services being offered at the facility are of high quality as this will strengthen contraceptive counseling by health care providers.

6.4 Recommendations for Future Research

1. Studies on LARC retention by women should be done to establish the level of satisfaction the LARC users have.
2. Studies on factors influencing uptake of Long Acting and Permanent Methods (LAPM) like sterilization and vasectomy should be considered to document why women who are eligible for LAPM methods don't opt for the same.

REFERENCES

- Agha, S. (2010). Intentions to use contraceptives in Pakistan: implications for behavior change campaigns. *BMC Public Health*, *10*(1), 450.
- Ali, M., and Cleland, J. (1999). Determinants of contraceptive discontinuation in six developing countries. *Journal of Biosocial Science*, *31*(03), 343-360.
- Bandura, Albert. Social foundations of thought and action (1986): A social cognitive theory. Prentice-Hall, Inc, 1-60.
- Bankole, A., Biddlecom, A., Guiella, G., Singh, S., and Zulu, E. (2007). Sexual behavior, knowledge and information sources of very young adolescents in four Sub-Saharan African countries. *African Journal of Reproductive Health*, *11*(3), 28.
- Bharadwaj, P., Akintomide, H., Brima, N., Copas, A., & D'Souza, R. (2012). Determinants of long-acting reversible contraceptive (LARC) use by adolescent girls and young women. *The European Journal of Contraception and Reproductive Health Care*, *17*(4), 298-306.
- Black, K., Lotke, P., Buhling, K. J., and Zite, N. B. (2012). A review of barriers and myths preventing the more widespread use of intrauterine contraception in nulliparous women. *The European Journal of Contraception and Reproductive Health Care*, *17*(5), 340-350.
- Bledsoe, C., Banja, F., and Hill, A. G. (1998). Reproductive mishaps and Western contraception: An African challenge to fertility theory. *Population and Development Review*, 15-57.
- Bloom, S. S., Lippeveld, T., and Wypij, D. (1999). Does antenatal care make a difference to safe delivery? A study in urban Uttar Pradesh, India. *Health Policy and Planning*, *14*(1), 38-48.
- Blumenthal, P., Voedisch, A., and Gemzell-Danielsson, K. (2011). Strategies to prevent unintended pregnancy: increasing use of long-acting reversible contraception. *Human Reproduction Update*, *17*(1), 121-137.
- Bulto, G. A., Zewdie, T. A., and Beyen, T. K. (2014). Demand for long acting and permanent contraceptive methods and associated factors among married women of reproductive age group in Debre Markos Town, North West Ethiopia. *BMC Women's Health*, *14*(1), 46.
- Caldwell, J. C., and Caldwell, P. (1987). The cultural context of high fertility in sub-Saharan Africa. *Population and Development Review*, 409-437.
- Curtis, S. L., and Neitzel, K. (1996). Contraceptive knowledge use and sources, 16-26.
- Dassah, E. T., Odoi, A. T., and Owusu-Asubonteng, G. (2013). Prevalence and factors predictive of long-acting reversible contraceptive use in a tertiary hospital in urban Ghana. *The European Journal of Contraception and Reproductive Health Care*, *18*(4), 293-299.
- Dempsey, A. R., Billingsley, C. C., Savage, A. H., and Korte, J. E. (2012). Predictors of long-acting reversible contraception use among unmarried young adults. *American Journal of Obstetrics and Gynecology*, *206*(6), 526. e521-526. e525.
- Eeckhaut, M. C., Sweeney, M. M., and Gipson, J. D. (2014). Who Is Using Long-Acting Reversible Contraceptive Methods? Findings from Nine Low-Fertility Countries. *Perspectives on Sexual and Reproductive Health*, *46*(3), 149-155.
- Finer, L. B., Jerman, J., and Kavanaugh, M. L. (2012). Changes in use of long-acting contraceptive methods in the United States, 2007–2009. *Fertility and Sterility*, *98*(4), 893-897.

- Frost, J. J., and Darroch, J. E. (2008). Factors associated with contraceptive choice and inconsistent method use, United States, 2004. *Perspectives on Sexual and Reproductive Health*, 40(2), 94-104.
- Glanz, K., Lewis, F. M., and Rime, B. K. (2002). *Health Behaviour and Health Education*. USA: McGraw-Hill, Inc, 30-67.
- Glasier, A., Scorer, J., and Bigrigg, A. (2008). Attitudes of women in Scotland to contraception: a qualitative study to explore the acceptability of long-acting methods. *Journal of Family Planning and Reproductive Health Care*, 34(4), 213-217.
- Griffiths, P., and Stephenson, R. (2001). Understanding users' perspectives of barriers to maternal health care use in Maharashtra, India. *Journal of Biosocial Science*, 33(03), 339-359.
- Haimovich, S. (2009). Profile of long-acting reversible contraception users in Europe. *European Journal of Contraception and Reproductive Healthcare*, 14(3), 187-195.
- Harper, C., Thompson, K., Waxman, N., and Speidel, J. (2009). Provision of long-acting reversible contraception at US abortion facilities and barriers to immediate postabortion insertion. *Contraception*, 80(2), 197-198.
- Hubacher, D., Mavranezouli, I., and McGinn, E. (2008). Unintended pregnancy in sub-Saharan Africa: magnitude of the problem and potential role of contraceptive implants to alleviate it. *Contraception*, 78(1), 73-78.
- Hussain, R. (2012). Abortion and unintended pregnancy in Kenya. *Issues in brief (Alan Guttmacher Institute)*(2), 1-4.
- Inaoka, E., Wakai, S., Nakamura, Y., Al Babily, Y., and Saghayroun, A. (1999). Correlates of visit regularity among family planning clients in urban Yemen. *Advances in Contraception*, 15 (4): 257-274.
- Jejeebhoy, S. J., Shah, I., and Thapa, S. (2005). *Sex without consent: Young people in developing countries*: Zed Books, 138-250.
- Kalmuss, D., Davidson, A. R., Cushman, L. F., Heartwell, S., and Rulin, M. (1996). Determinants of early implant discontinuation among low-income women. *Family Planning Perspectives*, 28, 256-260.
- Kavanaugh, M. L., Jerman, J., Hubacher, D., Kost, K., and Finer, L. B. (2011). Characteristics of women in the United States who use long-acting reversible contraceptive methods. *Obstetrics and Gynecology*, 117(6), 1349-1357.
- KNBS. (2010). Kenya National Bureau of Statistics and Macro: Kenya Demographic and Health Survey 2008-09. *Calverton, Maryland, USA: Kenya National Bureau of Statistics (KNBS) and ICF Macro*.
- KNBS. (2015). Kenya National Bureau of Statistics and Macro: Kenya Demographic and Health Survey 2015. *Calverton, Maryland, USA: Kenya National Bureau of Statistics (KNBS) and ICF Macro*.
- Kombo, K. D., and Tromp, D. L. (2006). *Proposal and thesis writing: An introduction*. Nairobi: Paulines pulication, 10-15.
- Kost, K., Singh, S., Vaughan, B., Trussell, J., and Bankole, A. (2008). Estimates of contraceptive failure from the 2002 National Survey of Family Growth. *Contraception*, 77(1), 10-21.
- Lasee, A., and Becker, S. (1997). Husband-wife communication about family planning and contraceptive use in Kenya. *International Family Planning Perspectives* 23:15-20.
- Magadi, M., and Curtis, S. L. (2003). Trends and determinants of contraceptive method choice in Kenya. *Studies in Family Planning*, 34(3), 149-159.

- Magadi, M., Diamond, I., and Rodrigues, R. N. (2000). The determinants of delivery care in Kenya. *Biodemography and Social Biology*, 47(3-4), 164-188.
- Mestad, R., Secura, G., Allsworth, J. E., Madden, T., Zhao, Q., and Peipert, J. F. (2011). Acceptance of long-acting reversible contraceptive methods by adolescent participants in the Contraceptive CHOICE Project. *Contraception*, 84(5), 493-498.
- MOH, (2012). Ministry of Health *National Family Planning Implementation Plan 2012-2016*. Retrieved from Kenya.
- MOH, (2015). Ministry of Health Internal Memo: Removal of Family Planning Cost from the Service Charter.
- Moreau, C., Trussell, J., Rodriguez, G., Bajos, N., and Bouyer, J. (2007). Contraceptive failure rates in France: results from a population-based survey. *Human Reproduction*, 22(9), 2422-2427.
- Mugenda, M. O., and Mugenda, G. A. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi, Kenya: African center for technology studies (ACTS).
- Ogden, Z. (2007). *Health Psychology textbook*.
- Oso, Y. W., and Onen, D. (2005). *A general guide to writing research proposal and report: A handbook for beginning researchers*. Kampala, Uganda: Makerere University Printery.
- Peipert, J. F., Madden, T., Allsworth, J. E., and Secura, G. M. (2012). Preventing unintended pregnancies by providing no-cost contraception. *Obstetrics and Gynecology*, 120(6), 1291-1297.
- Postlethwaite, D., Trussell, J., Zoolakis, A., Shabear, R., and Petitti, D. (2007). A comparison of contraceptive procurement pre-and post-benefit change. *Contraception*, 76(5), 360-365.
- Prochaska, J. O., and Velicer, W. F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion*, 12(1), 38-48.
- Raine, T. R., Foster-Rosales, A., Upadhyay, U. D., Boyer, C. B., Brown, B. A., Sokoloff, A., and Harper, C. C. (2011). One-year contraceptive continuation and pregnancy in adolescent girls and women initiating hormonal contraceptives. *Obstetrics and Gynecology*, 117(2 Pt 1), 363.
- Rose, S. B., Cooper, A. J., Baker, N. K., and Lawton, B. (2011). Attitudes toward long-acting reversible contraception among young women seeking abortion. *Journal of Women's Health*, 20(11), 1729-1735.
- Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education and Behavior*, 2(4), 328-335.
- Saleem, S., and Bobak, M. (2005). Women's autonomy, education and contraception use in Pakistan: a national study. *Reproductive Health*, 2(8), 1-8.
- Shah, N. M., Shah, M. A., and Radovanovic, Z. (1998). Patterns of desired fertility and contraceptive use in Kuwait. *International Family Planning Perspectives*, 133-138.
- Speizer, I. S., Hotchkiss, D. R., Magnani, R. J., Hubbard, B., and Nelson, K. (2000). Do service providers in Tanzania unnecessarily restrict clients' access to contraceptive methods? *International Family Planning Perspectives*, 26(1), 13-20.
- Spies, E. L., Askelson, N. M., Gelman, E., and Losch, M. (2010). Young women's knowledge, attitudes, and behaviors related to long-acting reversible contraceptives. *Women's Health Issues*, 20(6), 394-399.
- Stephenson, R., Baschieri, A., Clements, S., Hennink, M., and Madise, N. (2007). Contextual influences on modern contraceptive use in sub-Saharan Africa *American Journal of Public Health*, 97: 1233.

- Takele, A., Degu, G., and Yitayal, M. (2012). Demand for long acting and permanent methods of contraceptives and factors for non-use among married women of Goba Town, Bale Zone, South East Ethiopia. *Reproduction Health*, 9(26), 4755-4759.
- Tanfer, K., Wierzbicki, S., and Payn, B. (2000). Why are US women not using long-acting contraceptives? *Family Planning Perspectives*, 176-191.
- Weldegerima, B. and Deneke, A. (2008). Women's knowledge, preferences, and practices of modern contraceptive methods in Woreta, Ethiopia. *Research in Social Administrative Pharmacy* 4: 302-7.
- Westoff, C. F., and A. Bankole, (1998). "The Time Dynamics of Unmet Need: An Example from Morocco" *International Family Planning Perspectives* 24(1):12-14.
- Whitaker, A. K., Johnson, L. M., Harwood, B., Chiappetta, L., Creinin, M. D., and Gold, M. A. (2008). Adolescent and young adult women's knowledge of and attitudes toward the intrauterine device. *Contraception*, 78(3), 211-217.
- WHO. (2011). World Health Organization. Facts on induced abortion worldwide. Geneva, Switzerland: Department of Reproductive Health and Research. WHO Document Production Services.
- WHO, UNICEF (2012). World Health Organization. *Trends in Maternal Mortality: 1990 to 2010: WHO, UNICEF, UNFPA, and The World Bank Estimates*:
- Yeatman, S. E., and Trinitapoli, J. (2008). Beyond denomination: The relationship between religion and family planning in rural Malawi. *Demographic Research*, 19(55), 1851.

APPENDICES

APPENDIX 1: Questionnaire Administered to FP Clients

Facility Name _____

Interviewer No _____

Instructions: Use this form to interview the woman after she has received service but before she leaves the clinic. Ensure that the location of your interview area has auditory privacy. All instructions for the interviewer are written in italics. For open responses, write the response in space provided.

Section A: Socio-demographic Characteristics		
1.	What is your age?	_____ years
2.	What is your marital status?	1. Married 2. Single 3. Separated 4. Divorced 5. Widowed
3.	What is the highest level of school you completed?	1. Primary school 2. Secondary school 3. Tertiary 4. No formal education
4.	What is your religion?	1. Roman Catholic 2. Protestant/Other Christian 3. Muslim 4. No Religion
5.	What is your occupation?	1. Not working 2. Farming 3. Casual laborer/wages/Business 4. Paid employment/salaried 5. Others (specify) -----
6.	What is your monthly income range?	1. Less than Kes 10,000 2. Kes 10,001- 20,000 3. Kes 20,001- 50,000 4. More than 50,000
7.	Place of residence	1. Urban 2. Rural
8.	Average distance from home to the health facility	_____
Section B: Reproductive Health Characteristics		
9.	Have you ever given birth?	1. Yes 2. No → If No, go to question 13
10.	What was your age at first birth?	_____
11.	Number of living children?	_____

12.	What is your fertility intention?	<ol style="list-style-type: none"> 1. No more children 2. Wants in 2 years 3. Wants after 2 years 4. Wants but unsure of timing 5. Undecided
13.	What is your desired number of children?	_____
14.	What was your age when you first had sex? (Sexual debut)	_____
Section C: Health Care System Characteristics		
15.	What was the payment option for the FP services you have just received?	<ol style="list-style-type: none"> 1. Paid 2. Free 3. Used a voucher 4. Don't know
16.	If you paid, how much was the total cost inclusive of consultation fee?	_____
17.	Did the provider discuss with you your reproductive intentions? (<i>Does she want to have another child soon or does she wish to postpone the next birth for some time? Or does she want no more children at all?</i>)	<ol style="list-style-type: none"> 1. Yes 2. No
18.	Did the provider discuss your previous use of family planning?	<ol style="list-style-type: none"> 1. Yes 2. No
19.	Which methods did the provider counsel you on today? (<i>Select all that is mentioned</i>)	<ol style="list-style-type: none"> 1. Pill 2. Injectables 3. Implants 4. IUD 5. Sterilization/vasectomy
20.	Did the provider give you chance to choose your preferred method	<ol style="list-style-type: none"> 1. Yes 2. No
21.	What method did you receive at the clinic today?	<ol style="list-style-type: none"> 1. Pill 2. Injectables 3. Implants 4. IUD
22.	What was the main reason for choosing the contraceptive method that you received today? (<i>Select one main reason that is mentioned</i>)	<ol style="list-style-type: none"> 1. Cost/Affordability 2. Unavailability of Preferred method 3. Convenience 4. Duration of use of method 5. Spousal decision 6. Noninterference with sex 7. Noninterference with hormones 8. Noninterference with menses 9. No Side effects 10. Fear of insertion method 11. Other,

		specify_____
23.	If you didn't take LARC, how would you rate your willingness to use a LARC method if given more information on it?	1= strongly unwilling 2= Unwilling 3= neutral 4= Willing 5= Strongly willing
24.	Did the provider discuss with you how the chosen method works	1. Yes 2. No
25.	Did the provider discuss with you the potential side effect of your chosen method	1. Yes 2. No
26.	How did you learn about LARC? <i>(Select one main source of information)</i>	1. Media 2. Family/Friends 3. Community health worker 4. Health Workers 5. Others (specify_____)
27.	Have you discussed with your spouse/partner about the use of family planning method at any time?	1. Yes 2. No
28.	Does your partner approve use of contraceptives/family planning methods?	1. Yes 2. No
29.	Has money ever hindered you from use of family planning?	1. Yes 2. No


APPENDIX 2: Questionnaire administered to health care providers

Facility Name _____

	Question	Responses
1.	Does the area where LARC methods are provided have auditory privacy?	Yes No
2.	Does the area where LARC methods are provided have visual privacy?	Yes No
3.	Does this facility have a supply of Pills available in the FP clinic today?	Yes → If Yes, go to question 5 No
4.	If No above, how long has it been since you last had supply of Pills?	_____
5.	Does this facility have a supply of Injectables available in the FP clinic today?	Yes → If Yes, go to question 7 No
6.	If No above, how long has it been since you last had supply of injectables?	_____
7.	Does this facility have a supply of implants available in the FP clinic today?	Yes → If Yes, go to question 9 No
8.	If No above, how long has it been since you last had supply of implants?	_____
9.	Does this facility have a supply of IUDs available in the FP clinic today?	Yes → If Yes, go to question 9 No
10.	If No above, how long has it been since you last had supply of IUD?	_____
11.	Frequency of contraceptive commodity stock-outs	Always Occasionally Rarely Never
12.	Does this facility have adequate IUD insertion equipment available in the FP clinic today?	Yes No
13.	Does this facility have adequate IUD removal equipment available in the FP clinic today?	Yes No
14.	Does this facility have adequate Implant removal equipment available in the FP clinic today?	Yes No
15.	How many active providers are trained in implant and IUD insertion and removal in this family	_____ providers

16.	How many trained providers are based in the FP clinic?	_____ providers
17.	Provision of LARC methods to adolescents and youths	Yes No
18.	Do you offer LARC methods to all women regardless of their parity?	Yes No
19.	Do you normally conduct health outreaches in the communities to specifically sensitize women on LARC?	Yes No
20.	If yes above, how frequently?	Monthly Quarterly Rarely Other, specify_____
21.	What are some of the challenges faced in provision of LARC services?	
22.	Do you think there is anything that can be done at the health facility to increase LARC uptake?	

APPENDIX 3: Scientific Approval


MASENO UNIVERSITY
SCHOOL OF GRADUATE STUDIES
Office of the Dean

Our Ref: EL/ESM/00422/013

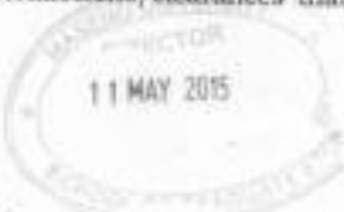
Private Bag, MASENO, KENYA
Tel:(057)351 22/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke


Date: 08th May, 2015


TO WHOM IT MAY CONCERN

RE: PROPOSAL APPROVAL FOR SUSAN ONTIRI—EL/ESM/00422/013

The above named is registered in the Master of Public Health of the School of Public Health and Community Development, Maseno University. This is to confirm that her research proposal titled "Determinants Influencing Uptake of Long Acting Reversible Contraceptives by Women Seeking Family Planning Services in Kakamega County, Kenya" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.




Prof. P.O. Oduor
DEAN, SCHOOL OF GRADUATE STUDIES

Maseno University *ISO 9001:2008 Certified* 

APPENDIX 4: Ethical clearance



MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3050
Fax: +254 057 351 221

Private Bag - 40105, Maseno, Kenya
Email: muero-secretariate@maseno.ac.ke

FROM: Secretary - MUERC

DATE: 31st July, 2015

TO: Susan K. Ontiri
EL/ESM/00422/2013
School of Public Health and Community Development
Maseno University

REF: MSU/DRP/MUERC/00177/15

RE: Determinants Influencing Uptake of Long Acting Reversible Contraceptives by Women Seeking Family Planning Services in Western Kenya. Proposal Reference Number MSU/DRP/MUERC/00177/15

This is to inform you that the Maseno University Ethics Review Committee (MUERC) determined that the ethics issues raised at the initial review were adequately addressed in the revised proposal. Consequently, the study is granted approval for implementation effective this 31st day of July, 2015 for a period of one (1) year.

Please note that authorization to conduct this study will automatically expire on 30th July, 2016. If you plan to continue with the study beyond this date, please submit an application for continuation approval to the MUERC Secretariat by 22nd June, 2016.

Approval for continuation of the study will be subject to successful submission of an annual progress report that is to reach the MUERC Secretariat by 22nd June, 2016.

Please note that any unanticipated problems resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to this study to MUERC for review and approval prior to initiation. Please advise MUERC when the study is completed or discontinued.

Thank you,

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'Boruke Anyona'.

Dr. Boruke Anyona,
Secretary,
Maseno University Ethics Review Committee.



Cc: Chairman,
Maseno University Ethics Review Committee.

MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED



APPENDIX 5: Research Approval

REPUBLIC OF KENYA

Telegrams: "PROVMED", KAKAMEGA
Telephone: 056 31125
Fax: 056 31125
E-mail: pdmsw@estera@gmail.com
When replying please quote



KAKAMEGA COUNTY
P O BOX 2369
KAKAMEGA
G.P.O. 50100

11th August, 2015

Ref : CGK/MOH/CIR/VOLI/ 5/91

COUNTY GOVERNMENT OF KAKAMEGA OFFICE OF THE CHIEF OFFICER HEALTH SERVICES

TO ALL:

- SCMOHs
- Medical Superintendent:
- CGH

Dear all,

RE: CLEARANCE TO COLLECT DATA FROM YOUR FACILITIES
SUSAN K. ONTIRI

The above named is a Master of Public Health student from Maseno Univeristy who wished to carry out a study on Determinants influencing uptake of long Acting Reversible Contraceptives by women seeking Family Planning Services in Kakamega County.

She is requesting to collect data from the following facilities:

- | | |
|-------------------------------------|---------------------|
| 1. Kakamega County General Hospital | 7. Mumias Model H/C |
| 2. Malava County Hospital | 8. Iguho C/H |
| 3. Butere County Hospital | 9. Makunga H/C |
| 4. Likuyani Hospital | 10. Matungu CH |
| 5. Navakholo | 11. Lumakanda CH |
| 6. Khwisero H/C | 12. Shinyalu HC |

Kindly accord her all the necessary support she may require.

Thank you

Dr. David Oluoch.
For: CHIEF OFFICER FOR HEALTH /
COUNTY DIRECTOR OF HEALTH
KAKAMEGA COUNTY.

APPENDIX 6: Informed Consent

Information sheet

The following information is to enable you to give voluntary, informed consent to participate in this study. Please read the information carefully before signing the consent form. To be verbally read for those who are not able to read.

Study Title:

Determinants of Uptake of Long Acting Reversible Contraceptives by Women seeking Family Planning Services in Kakamega County, Kenya

Study Investigator: Susan Ontiri, Masters in Public Health Student, Maseno University.

Purpose of Research:

We are carrying out a study whose aim is to establish the factors that influence uptake of long acting reversible contraceptives by Women seeking Family Planning services in Kakamega County, Kenya. The findings will be used by family planning program planners and policy makers to enhance uptake of long acting and reversible methods.

Potential Benefits and Risks:

Participation in this study will not translate into any direct benefits to the participants. There are no foreseeable risks and immediate benefits for participating in this study. The findings of the study might be used by Ministry of Health and other partners in promotion of LARC uptake in Kakamega County.

Basis for Participation:

Upon enrolment in the study, you will be asked detailed questions on socio-demographic, reproductive characteristics and your experience in the family planning clinic. This information will be recorded onto forms. In addition a research assistant will ask you questions concerning contraceptive methods. The interview will take at most 15 minutes. Participation in this study is entirely voluntary. By participating in this study, you do not have to respond to questions that you do not want to answer; in addition you may withdraw from the study at any time without giving reasons. If you decline to participate, you shall not be discriminated against in any way and your decision shall be respected.

Confidentiality:

Utmost confidentiality will be observed in handling the information given. The information will only be used for the purposes of this study.

PARTICIPANTS CONSENT

I declare that I have read the foregoing information or it has been read to me. I have had the opportunity to ask questions about it and any questions asked have been answer to my satisfaction. By signing below, I consent to participate in the study described above, with knowledge that I can withdraw from the study at any time.

Participant's Signature or thumbprint _____

Date _____

CONTACTS:

If you have any questions or concerns about this survey you may contact the Study investigator:

Susan Ontiri, MPH Student, Maseno University at +254707639688; susan.ontiri@gmail.com

For questions regarding study participants' rights please contact:

For any questions pertaining to rights as a research participant, contact person is: The Secretary, Maseno University Ethics Review Committee, Private Bag, Maseno; Telephone numbers: 057-51622, 0722203411, 0721543976, 0733230878; Email address: muerc-secretariate@maseno.ac.ke; muerc-secretariate@gmail.com.