

**Factors Associated with Choice of Long Acting Contraceptive Methods
among Women of Reproductive Age in Bungoma East Sub-County**

Jonathan N. M. Nthusi

SM/PGFM/03/11

**A thesis submitted in partial fulfillment for the award of
Masters in Medicine, Family Medicine (MMed FM) of Moi University**

August 2015

DECLARATION

This thesis is my original work and has not been presented for a degree in any other university. No part of this work may be reproduced without prior written permission of the author and/or Moi University.

Signature

Date

This thesis has been submitted with our approval as university supervisors

Dr. P. M. Chege

Department of Family Medicine

signature

date

Dr. Ray Downing

Department of Family Medicine

signature

date

DEDICATION

To my parents, who have sacrificed and endured much and committed themselves fully to raise and support me to the highest level possible.

ABSTRACT

Background: In Kenya, the utilization of long acting contraceptive methods remains low, more so in the rural population. This study assessed the factors associated with the choice of long acting contraceptive methods among women of reproductive age in a rural population in western Kenya.

Objective: To describe the factors associated with choice of long term contraception among women of reproductive age in a rural Health and Demographic Surveillance System's population in western Kenya.

Design and methodology: A cross-sectional community based study was conducted between March and August 2013. Computer generated random sampling was used to select 500 participants for the survey. An interviewer -administered questionnaire was used for quantitative data collection. A community baraza and four focus group discussions were conducted to collect qualitative data. Descriptive statistics were used to summarize data. Chi² test was used for association between categorical variables. P-values of less than 0.05 were considered significant. Qualitative data were presented in verbatim in triangulation with the quantitative data.

Results: A total of 490 women successfully participated in the survey (response rate 98%). The mean age of the respondents was 31 years with a standard deviation of 9.01. Majority were married (76%), Christians (99.6%) and had attained primary level of formal education. The total fertility rate was 4.6 children per woman. The awareness of contraception was 90% with 57% unplanned fertility. Awareness of long acting contraceptive methods was 64% with 28% currently using long acting contraception. 19%, 9%, 1% were currently using implants, sterilization and IUD respectively. Factors associated with choice of long term contraceptive methods were found to be awareness of implants (AOR 0.42 , 95% CI 0.21 – 0.83, P value 0.013) and current reproductive goal of permanent limitation (AOR 3.10, 95% CI 1.35 – 6.69, P value 0.007). Emerging themes included lack of awareness, fear of procedures, number and gender of living children, side effects and myths.

Study limitations: Supply factors and spousal involvement in choice of long acting contraceptive methods were not studied.

Conclusions and recommendations: Use of long term methods of contraception was low in relation to short term methods. There was significant association between awareness of implants, the current reproductive goal to family size with their choice by the respondents. We recommend formulation of targeted community oriented health education policies to increase awareness of long term methods and to conduct further research to describe the role of male partners in the choice of long term contraceptive methods.

TABLE OF CONTENTS

DEDICATION	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES.....	ix
ACKNOWLEDGEMENT	x
ACRONYMS/ABBREVIATIONS.....	xi
DEFINITION OF TERMS.....	xii
CHAPTER 1: INTRODUCTION	1
1.1 BACKGROUND.....	1
1.2 PROBLEM STATEMENT	4
1.3 JUSTIFICATION	5
1.4 RESEARCH QUESTION	6
1.5 BROAD OBJECTIVE.....	6
1.5.1 SPECIFIC OBJECTIVES	6
CONCEPTUAL FRAMEWORK	7
CHAPTER TWO: LITERATURE REVIEW	9
2.1 Background	9

2.2 Effectiveness of long acting contraceptive methods	10
2.3 Demand Factors and unmet need	10
2.4 Demand generating factors.....	11
2.5 Supply factors.....	12
2.6 Demand crystallizing factors.....	12
CHAPTER THREE: MATERIALS AND METHODS	14
3.1 Study design	14
3.2 Study setting	14
3.3 Study population	15
3.4 Sample size.....	15
3.5 Sampling procedure:	16
3.5.1 Inclusion criteria.....	16
3.5.2 Exclusion criteria:	16
3.6 Data collection procedures:	16
QUANTITATIVE DATA	16
QUALITATIVE DATA	17
3.7 Validity and Reliability:	18
3.8 Data management, analysis and presentation.....	18
3.9 Limitations of the study and bias minimization	19
3.10 Ethical Considerations.....	20

CHAPTER FOUR: FINDINGS	22
CHAPTER FIVE: DISCUSSION	34
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS	39
6.1 CONCLUSIONS	39
6.2 RECOMMENDATIONS	39
APPENDICES.....	41
Appendix 1: INFORMED CONSENT	41
Appendix 2: QUESTIONNAIRE	43
Appendix 3: FOCUS GROUP DISCUSSION GUIDE.....	50
Appendix 4: QUESTIONNAIRE IN BUKUSU	51
Appendix 5: THE WDHSS MAP.....	58
Appendix 6: IREC APPROVAL LETTER.....	59
REFERENCES.....	60

LIST OF TABLES

	Page
• Table 1: Socio demographic characteristics.....	21
• Table 2: Reproductive history of women in reproductive age group in WHDSS, 2013.....	22
• Table 3: Self reported awareness of various contraceptive methods among women of reproductive age group in Webuye HDSS.....	23
• Table 4: Use of contraception among women in the reproductive age group in WHDSS.....	25
• Table 5: Exposure to contraception messages among women of reproductive age group in Webuye HDSS.....	27
• Table 6: Factors associated with choice of long term method among women of reproductive age group in Webuye HDSS.....	28
• Table 7: Crude odds ratios for factors associated with choice of long term method.....	29
• Table 8: Adjusted odds ratios for factors associated with choice of long term method.....	30

LIST OF FIGURES

	page
Figure 1: Projected number of contraceptive users globally.....	1
Figure 2: Trends in contraceptive use in Kenya.....	2
Figure 3: Conceptual framework for the study.....	7
Figure 4: Number of living children among women of reproductive age in WHDSS...22	
Figure 5: Awareness of various contraceptive methods among women currently using contraception in WHDSS	23

ACKNOWLEDGEMENT

I sincerely acknowledge the Ministry of Health for granting me study leave and facilitating my training. I also wish to sincerely thank the dean, Moi University School of Medicine, my supervisors Dr. PM Chege and Dr. Raymond Downing, the entire teaching fraternity as well as colleagues at the department of Family Medicine for their comprehensive support.

I owe much gratitude to Dr. Ann Mwangi and Dr. Violet Naanyu for their helpful input in various stages of this work. I acknowledge my research assistants Dorothy, Patrick and Lucas for their worthy support.

I greatly thank my wife Esther, for her unrelenting patience and moral support during the entire process of conducting research and writing up the thesis.

My sincere gratitude also goes out to Naomi, Dan and Furaha for their invaluable input in various ways towards making this work a success.

I also acknowledge Esther and Ndi for their kind constructive inputs.

To all and many others unnamed here, may God bless you in abundance.

ACRONYMS/ABBREVIATIONS

CPR	Contraceptive prevalence rate.
Cu IUCD	Copper – containing intra-uterine contraceptive device.
GSREC	Graduate Studies Research and Ethics Committee.
HDSA	Health & Demographic Surveillance Area.
IREC	Institutional Ethics and Research Committee.
IUD	Intra-uterine device.
LAPM	Long acting and Permanent method.
LNG-IUS	Levonorgestrel-releasing intrauterine system.
NGO	Non-governmental organization.
STATA	Statistics and data.
TFR	Total Fertility Rate.
VLIR-UOS	Vlaamse interuniversitaire Raad University Development cooperation.
WHDSS	Webuye Health and Demographic Surveillance System.
WHO	World Health Organization

DEFINITION OF TERMS

Contraception: the deliberate prevention of conception or impregnation by any of various drugs, techniques, or devices.

Contraceptive prevalence rate: the percentage of women of reproductive age who are currently using, or whose sexual partner is currently using, at least one contraceptive method, regardless of the method used. It is reported for women aged 15 to 49 who are married or in a union. (WHO)

Fertility Rate: the ratio of live births in an area to the population of that area; expressed per 1000 population per year.

Health and Demographic Surveillance System: A geographically defined population under continuous demographic monitoring, with timely production of data on all births, deaths, and migrations aimed at providing a platform for assessing a wide range of health-system, social and economic interventions, all closely associated with research activities.

Total Fertility Rate: the number of children that a hypothetical female would have over the course of her reproductive life if she experienced the age-specific fertility rates observed in a given calendar year.

Unmet need: women with unmet need are those who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child. The concept of unmet need points to the gap between women's reproductive intentions and their contraceptive behavior (WHO, 2010).

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Contraception is a practice adopted by women and couples with an aim to limit the number of children, space births or avoid pregnancy. Contraceptive methods can be grouped into two categories: long-acting methods (intrauterine devices, implants and sterilization), usually used to limit childbearing, and short-acting methods (pills, condoms, spermicides, injectables, other modern methods and all traditional methods), better suited for women who would like to space births (Wang, 2012).

The number of contraceptive users globally is projected to grow to 214 million women in the year 2020 as shown in Figure 1(UN, 2014).



Figure 1: Projected number of contraceptive users globally

Findings from the Kenya Demographic and Health Survey (KDHS) 2014 indicate that the Contraceptive Prevalence Rate (CPR) in Kenya was 58% and has been increasing progressively as shown in Figure 2 (KNBS, 2015).

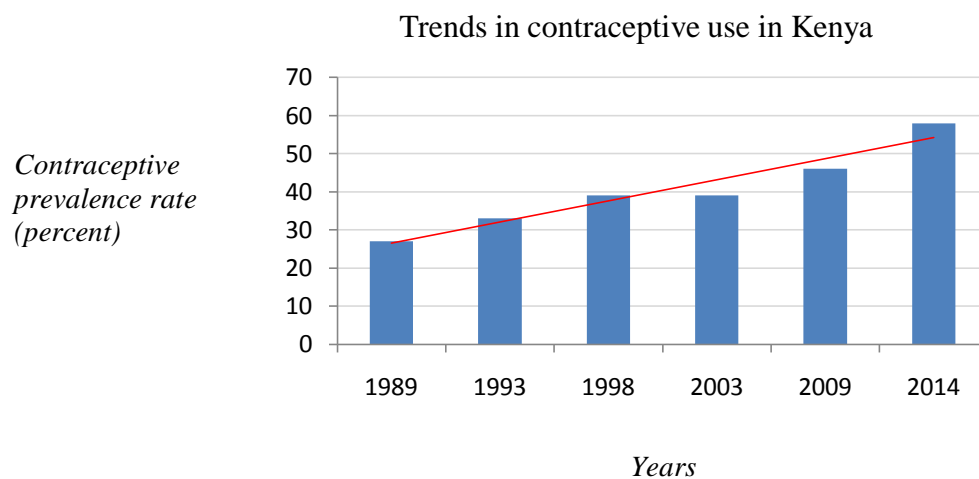


Figure 2: Trends in contraceptive use in Kenya

Women and couples who want safe and effective protection against pregnancy would benefit from access to more contraceptive choices, including long acting contraceptive methods (Alemayehu et al, 2012). More than 350 million couples worldwide have limited or no access to effective and affordable family planning, especially to long acting and permanent methods (USAID, 2008). The Intrauterine Contraceptive Device (IUCD) is the most commonly used method of reversible contraception worldwide (UN, 2011). Twenty three percent of all female contraceptive users in the world and thirteen percent of the world's married women use the IUCD as their method of contraception (Buhling et al, 2014; Jacobstein, 2008). Long acting contraceptive methods are modern options of family planning which have been shown to be significantly more effective than short acting

methods in terms of their pearl index (Mansour et al, 2010). They have additional advantages of being convenient, well-liked by users and cost effective (Zhang et al, 2009). In developing countries, 20 to 30% of women who use oral or injectable contraceptives stop within two years of starting because of side effects or other health concerns and many of them could benefit from switching to long acting methods (Ali, 1999).

In Sub-Saharan Africa a quarter of women and couples have unmet needs for contraception (Sonfield, 2006; USAID, 2006; Ross & Winfrey, 2001). 14% use modern contraceptives and most births in the region are still spaced closer than two years (USAID 2008; Ross & Winfrey, 2001). In Ethiopia, the contraceptive prevalence rate is 15% with an unmet need for family planning at 34% (Alemayehu et al, 2012).

According to the Kenya Demographic Health Survey 2008-09, 46% of Kenyan married women use contraception, which is a substantial increase from 7% in 1978 (KNBS,2010). Changes in use of specific methods over the past decade have taken mixed directions. Use of pills, the IUCD, and the rhythm method appears to be declining, while there has been a notable increase in use of injectable contraceptives, especially since 2003(KNBS,2010). Contraceptive services are offered free of charge at government health facilities of level 3 and above but in spite of that, the utilization of long acting contraceptive methods remains low.

Our literature search for Kenya studies on factors that determine contraceptive method choice did not yield any studies.

1.2 PROBLEM STATEMENT

According to the KDHS of 2009, the Western region, which hosts the study population in Bungoma, had the third highest unmet need for contraception in the country at 26% (KNBS, 2010). In the KDHS 2014, Bungoma County was reported among the counties with a contraceptive prevalence rate (CPR) below the national average of 58% (KNBS, 2015).

Gaps in reproductive health/family planning and sexual health care account for nearly one-fifth of the worldwide burden of illness and premature death, as well as one-third of the illness and death among women of reproductive age (Andreea et al, 2011; Catherine & Everd, 2009).

Despite their effectiveness, utilization of long acting contraceptive methods is low in most sub Saharan Africa countries (Thoai et al, 2013). Review of records in the family planning clinic at Webuye District Hospital, the highest level health facility within the WHDSS, revealed that utilization of long term methods is less than 5% of all methods offered in 2012. A pilot study conducted in this clinic on thirty random clients revealed that a significant proportion (25%) was observed to make multiple revisits for short term methods for periods longer than two years. This included the use of short term methods such as three monthly Depo-Provera injections while admitting that they had no intentions of getting any more children.

Despite the government making these long acting methods available for all eligible users (WHO, 2010), many of the women, who expressed desire not to have more children continued to use short acting methods for long periods; sometimes until menopause.

This could be interpreted as there being a high unmet need for long term contraceptive methods. Changes in use of specific contraceptive methods in Kenya have taken mixed directions over the last decade (KNBS, 2010). For instance, the percentage usage of the IUCD appears to be declining, being 3% (1998), 2%(2003) and 2%(2009); while that of injectables appears to be increasing, being 12%(1998), 14%(2003) and 22%(2009) (KNBS, 2010). The reasons behind this phenomenon are not documented and the unmet need for contraception in Western region which hosts the study population remains higher (26% of married women) than the national average (25% of married women) (KNBS, 2010).

1.3 JUSTIFICATION

Our study undertook to determine factors that were associated with the apparent low selection of long acting contraceptive planning methods. Findings from the study shall inform the various stakeholders of contraception as a pillar of primary health care, including health policy makers, health workers, community (potential users) and academia upon publication, to effectively plan and implement future interventions especially at the community level, aimed at decreasing the unmet need for contraception.

This study was in accordance with the Kenya Ministry of Health Division of Reproductive Health proposed 2010 – 2014 research agenda (GOK, 2010) as well as the WHO global research agenda for Family Planning (Ali et al, 2013).

A community study was preferred over a hospital because it is well known that hospital records may not be a true representation of the community in the area of study.

1.4 RESEARCH QUESTION

Among women within the reproductive age group in Bungoma Sub-county, what were the factors associated with the choice of long acting contraceptive methods?

1.5 BROAD OBJECTIVE

To describe the factors associated with the choice of long acting contraceptive methods among women within the reproductive age group in Bungoma East Sub-County

1.5.1 SPECIFIC OBJECTIVES

1. To describe the socio - demographic characteristics of women aged 18 – 49 years within Bungoma East Sub-County.
2. To describe the current pattern of use of the various long acting contraceptive methods among women aged 18 – 49 years within Bungoma East Sub-County.
3. To describe the factors associated with the choice of implants, IUCD and sterilization among women within the reproductive age group in Bungoma East Sub-County.
4. To determine the barriers to choice of long acting contraceptive methods among women of reproductive age group in Bungoma East Sub County.

CONCEPTUAL FRAMEWORK

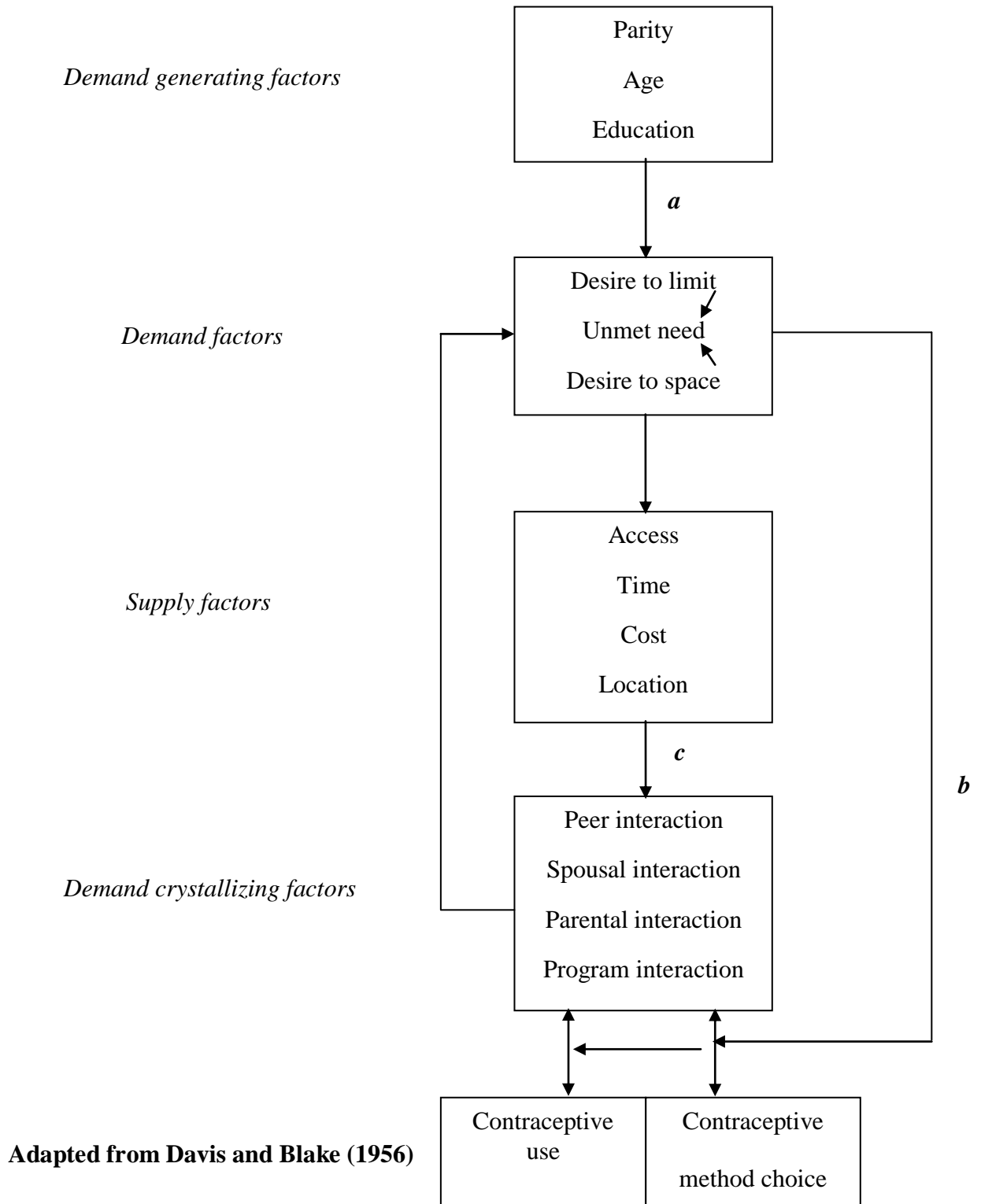


Figure 3: Conceptual framework for the study

The schematic presentation in Figure 3 examines the relative roles of individual and social support factors as determinants of use of contraceptives and choice of methods.

Determinants of contraceptive choice are divided into four general classes: (i) demand-generating factors such as education, age and other personal characteristics; (ii) demand components which are composed of desire to limit births and desire to space future births; (iii) supply factors and (iv) demand crystallizing components which are composed of factors that facilitate the implementation of the outcome such as spousal support, social (peer) support and parental support.

In this framework, individual agency is generated by individual characteristics indicated by the arrows *a* and *b* representing the extent to which demand fosters adoption of a contraception method in the absence of facilitating factors. Pathway *c* represents the role of crystallizing factors in fostering the implementation of demand. Furthermore, programme activities play a role in contraceptive method adoption that is similar to the roles of social, familial and spousal support. The psychological, logistical and social constraints to contraception adoption are offset by programme activities that enhance service accessibility, improve the climate of information exchange and legitimize contraceptive behavior.

CHAPTER TWO: LITERATURE REVIEW

2.1 Background

Long acting contraceptive methods are the dominant mode of contraception in developed countries (Wang, 2012). Globally, China's total contraceptive prevalence rates remain the highest from 1980 to 2010, with the prevalence rate of long term methods such as sterilization and IUD usage at 31.7% and 48.15% respectively in 2010 (Wang, 2012)

In sub-Saharan Africa, utilization of long term contraceptive methods is generally much lower than in the western world. Among married women in Nigeria in 2013, 1.8% of them were using long acting contraceptive methods (CSA Nigeria, 2014). A study done in South Africa revealed that among the women using contraception, small percentage (6%) were using long acting or permanent method, and it was found that poor knowledge regarding long acting and permanent methods (LAPMs) is likely to be contributing to the poor uptake of these methods (Crede et al, 2012).

In Ethiopia, the second most populous country in Sub-Saharan Africa, the Total Fertility Rate is 5.4 children per woman; the contraceptive prevalence rate is 15% (Alemayehu et al, 2012). Among married women in Ethiopia in 2011, 4.2% were using long acting contraceptive methods (CSA Ethiopia, 2012).

In Kenya, there has been a substantial increase in contraceptive use since the late 1970s, from 7% of married women in 1978 to 46% in 2008-9 and among married women in 2009, 7.7% were using long acting contraceptive methods (KNBS, 2010).

2.2 Effectiveness of long acting contraceptive methods

A systematic review of 139 studies done between 1990 and 2003 assessing the one year pearl indices of various contraceptive methods confirmed the hierarchy of contraceptive effectiveness in descending order as: (1) female sterilization, long-acting hormonal contraceptives (LNG-IUS and implants); (2) Cu-IUDs with $\geq 300 \text{ mm}^2$ surface area; (3) Cu-IUDs with $< 300 \text{ mm}^2$ surface area and short-acting hormonal contraceptives (injectables, oral contraceptives, the patch and vaginal rings), (4) barrier methods and natural methods (Mansour et al, 2010).

2.3 Demand Factors and unmet need

Contraceptive use and unmet need for family planning are key to understanding profound changes in fertility and to improving reproductive health worldwide (UN, 2011). Worldwide, contraceptive prevalence increased from 54.8% (52.3–57.1) in 1990, to 63.3% (60.4–66.0) in 2010, and unmet need for family planning decreased from 15.4% (14.1–16.9) in 1990, to 12.3% (10.9–13.9) in 2010 (Alkema et al, 2013).

Among married women in Nigeria in 2013, the unmet need for contraception was 16.1% (CSA Nigeria, 2014) while it was 34.3% in a similar population in Uganda (UBOS, 2012). 46% of married women were currently using a contraceptive method in Kenya in 2009, the total demand for family planning comprised 71 percent of married women, and therefore the unmet need for contraception was 25% (KNBS, 2010). Western province, which hosted the study population, had the third highest unmet need for family planning in the country in 2009 (KNBS, 2010).

2.4 Demand generating factors

The results from a multinomial logit model in China show that an individual's contraceptive choice depends on individual characteristics, including ethnicity, age, education level and the strength of family planning policies (Wang, 2012). Policies vary with different regions. For instance, it is a family planning policy in China to legally allow only one child. This generates demand for use of contraceptive methods such as long acting methods which effectively limit births.

Findings from a study in Mexico in 2010 involving 755 women from different social economic backgrounds who underwent bilateral tubal ligation suggested that younger age, more education, use of some forms of birth control, and increased parity were associated with women's decisions to undergo tubal ligation (Rudzik et al, 2010).

In a cross sectional study in 2012 on factors impacting knowledge and use of long acting and permanent contraceptive methods in South Africa, poor knowledge regarding long acting methods was found to be contributing to their poor uptake (Crede et al, 2012).

Parity was found to be consistently associated with intention to use contraception in a qualitative study jointly done in Kenya and Nigeria in 2015 (Babalola et al, 2015). A community study done in Ethiopia concluded that positive knowledge of LAMPs in women who had two or more pregnancies and in women who did not want to have an additional child, were significantly associated with higher use of long acting and permanent contraceptive methods (Alemayehu et al, 2012).

2.5 Supply factors

In a study conducted in Mexico in 2010 involving 755 women of various social economic backgrounds undergoing bilateral tubal ligation, there was a statistically significant association demonstrated between increased utilization of female sterilization and improved access of the service (Rudzik et al, 2010).

Regarding the impact of cost on the use of contraceptive methods, findings from the KDHS 2008-9 were that women in the richest quintile appeared to be more likely than women in the poorest quintile to use long-term contraception, as it is more expensive than short-term contraception (KNBS, 2010). Therefore, closing this particular gap between the rich and the poor in developing countries will entail addressing women's access to contraceptives and making all methods affordable (Andreea et al, 2011). In Kenya, women pay a minimal fee for bilateral tubal ligation.

2.6 Demand crystallizing factors

Several studies support the evidence that evidence that women do not make decisions to use contraceptives in isolation, but in consultation with others in their social networks (Ochako et al, 2015). The role of spousal interaction in contraceptive choice has been studied. Several studies have found a significant relationship between spousal communication and increased contraceptive use (Tumlinson et al, 2013; Link, 2011; Gayen & Raeside, 2010). Studies have also found a significant positive relationship between personal or perceived spousal approval and use of contraceptive methods.

As concluded in the Kenya Demographic and Health Survey 2008-09, current users of modern methods who are informed of potential side effects and problems of each method are best able to make an informed choice about the method they would like to use (KNBS, 2010).

CHAPTER THREE: MATERIALS AND METHODS

3.1 Study design

Cross-sectional community based study. We opted for a mixed quantitative and qualitative study design as it was best suited to answer our research question. The quantitative arm of the study was appropriate in identifying the social demographic characteristics and how many respondents held certain pre-defined opinions with regard to choice of long acting contraception. The qualitative arm was particularly suited in exploring exactly how these opinions were constructed and expressed within the community context of the study population.

3.2 Study setting

According to the last census of the Webuye Health and Demographic Surveillance area, there are 20 970 women within the age group 18 – 49 years, distributed within 13 000 households in 6 sub locations. The WHDSS was established in 2007 as one of the activities of Moi University VLIR-UOS Health Sciences Project. The Health & Demographic Surveillance Area (HDSA) is located in Webuye Division in Bungoma East District, Western province. The area lies between latitude $0^{\circ}45'0''$ N and $0^{\circ}30'0''$ N of the Equator and longitude $34^{\circ}40'0''$ E and $34^{\circ}45'0''$ E of the Greenwich meridian.

The area covers approximately 120Km^2 . It includes both rural and semi-urban areas. Farming is the main economic activity within the region. Maize is grown for subsistence, alongside beans, millet and sorghum. Small scale dairy farming is widely practiced, as well as poultry keeping. A paper factory and chemical processing plant are located in the

adjacent area. The living standards are generally low and social amenities like clean water, sanitation and electricity are not available to the majority of the residents.

3.3 Study population

Women within the age group (18 - 49 years) in the Webuye Health and Demographic Surveillance System.

3.4 Sample size

The minimum required sample size for the study was determined using the formula for estimation of single population proportion with the assumption of 95% confidence level, margin of error of 5% and expected prevalence of modern contraceptive use in Western province region of (41%). To compensate for a non-response rate it was planned to sample an additional 10%.

$$n = \frac{z^2 p(1-p)}{e^2}$$

where n = sample size; z = confidence level z score (1.96) p = estimated proportion of modern contraceptive use (0.41) e = margin of error (0.05)

$$\begin{aligned} \text{hence } n &= \frac{1.96^2 \times 0.41 \times 0.59}{0.05^2} \\ &= 372 \end{aligned}$$

10% non-response rate is 37.2; **Sample size = 410**

3.5 Sampling procedure:

Sampling method: Simple random sampling.

The latest census record of the WHDSS was used. A computer generated random sample of 500 of all women in the age group 18-49 years was obtained by an electronic random number generator. For the qualitative arm, purposive sampling was used. Women aged 18 years and above were chosen since this is the legal age for competence to give consent in Kenya. The WHDSS census and GPS details provided the exact location of the participant. This sample (500) took into consideration those that may be unavailable to participate for various reasons. Community elders and leaders were approached as guides to the households and the individual participants.

3.5.1 Inclusion criteria

- Consenting women aged between 18 – 49 years within the Webuye Health and Demographic Surveillance System's population.

3.5.2 Exclusion criteria:

- Women with mental illness.

3.6 Data collection procedures:

QUANTITATIVE DATA

The quantitative data were collected using structured interviewer administered questionnaires while focus groups discussions were organized for the qualitative part. The questionnaires constituted information on socio-demographic and economic variables, reproductive history, knowledge, attitude and practice of long acting contraceptive

methods and family planning questions. The questionnaires were adapted from different surveys considering the local and regional situation of the study area (Alemayehu, 2012; KNBS, 2010).

The questionnaire was pre-tested in Webuye Sub county hospital on women seeking contraceptive services at the Family Planning clinic as well as women in the postnatal ward. Based on the pilot study, the time needed for the complete interview and the number of data collectors in need was estimated. The principal investigator trained and certified three WHDSS enumerators as data collectors for one day on the objectives, data collection tools and interview techniques.

During the actual data collection, in occasions where the sampled women were not accessed for interview, up to three attempts were made for interviewing to lessen the non-response rate. A total of 490 respondents were interviewed. The questionnaires were checked by the principal investigator on daily basis for completeness and kept in a box file under lock and key at the WHDSS office.

QUALITATIVE DATA

Participants for the qualitative arm of the study were selected purposively during the quantitative survey. A *community baraza* comprising eighteen women of the target population was conducted, to explore the feasibility and guide the approach to the focus group discussions. This lasted one and a half hours. A Focus group discussion guide was used to explore ideas of women on using long acting contraceptive methods and for triangulation with the quantitative study.

During the focus group discussions, participants were informed about the purpose and process of the study to obtain informed consent of each participant. One research assistant was assigned for recording the conversation using a digital voice recorder while the principal investigator facilitated the discussion and took notes.

A total of four focus group discussions were conducted until information saturation was achieved. The groups were categorized on the basis of the number of living children, i.e. up to three and above three children, in separate sites within the study area. Each group consisted of eight participants and took an average of forty five minutes to one hour and was held within church compounds as suggested by the interviewees. Among the issues explored during the focus group discussions were: the attitudes towards using long acting contraceptive methods, reasons for not using, when the women prefer to start long acting contraceptive methods and their reasons.

3.7 Validity and Reliability:

A pretested questionnaire was used, which was adopted and modified from a similar mixed qualitative and quantitative study in 2012, in Ethiopia (Alemayehu, 2012). The questionnaire was validated by conducting a pilot study before the actual data collection.

3.8 Data management, analysis and presentation

Questionnaires were checked for completeness and coded by the principal investigator. Data were entered in a computerized database designed in access then later exported to STATA for analysis.

Descriptive statistics (frequencies and percentages or means and standard deviation for data that were of normal distribution) were used to summarize data. Chi-square test was used to determine association between categorical variables. T-test was used for associations between numerical variables.

Results were presented in form of frequency tables and charts (Bar-graphs and pie-charts).

Univariate and bivariate analyses were conducted to test for association between respondent factors and their choice of long acting contraceptive methods rather than short acting methods.

Logistic regression models were used to determine the likelihood of using a long-term rather than a short-term method of contraception as a function of the woman's age, religion, level of education, number of living children, gender proportion of children, awareness of long acting methods and the reproductive goal or intention for contraceptive use at the time of the survey (spacing versus limiting childbearing). P-values less than 0.05 were considered significant.

Data from the focus group discussion was transcribed and translated into English then thereafter categorized accordingly to main thematic areas manually by content analysis (Pope & Mays, 2006). The findings were presented in narratives in triangulation with the quantitative results.

3.9 Limitations of the study and bias minimization

Being a cross sectional study, we relied on self-reported data, raising the possibility of the responses being affected by recall bias as well as social desirability bias. To minimize this, during data collection the principal investigator and the research assistants took appropriate

steps to minimize subjectivity and social desirability by assuring the respondent of confidentiality as well as interviewing participants in a private location in the absence of a third party. In addition, social distance between the interviewer and the interviewee was minimized.

Another limitation of the study was that it relied on cross-sectional data, thereby making causal inference difficult. That notwithstanding, the focus group discussions revealed integral community perceptions with regard to long acting contraception which influence choice. In addition, the consistency and strength of the association of individual characteristics and contraceptive choice support the argument that the observed relationships are not inconsequential. The study did not address supply factors as well as the knowledge and attitudes of male partners to long acting methods and their influence on contraceptive choices for their spouses. The focus was on the perceptions of women of reproductive age group, given the time constraints.

3.10 Ethical Considerations

- Approval to conduct the study was sought from the relevant authorities including GSREC and WHDSS MU VLir-ous health sciences committee (Approval number 00960) (Appendix 6).
- Community leaders were contacted and involved in community entry. Informed consent to participate in the study was sought from all participants. No names were used on the data collection tools which were stored by the primary investigator.

Data confidentiality

- Access to the individually identifiable data was limited to the principal investigator and the trained research assistants. Questionnaires were kept in a locked cabinet in an area with limited public access and a locked door at the WHDSS office in Webuye Level 4 Hospital. Computers and electronic data files were password protected and backed up weekly. Data shall be securely disposed off at an appropriate time (minimum 7 years for health data) by shredding the paper and permanently deleting electronic data.

CHAPTER FOUR: FINDINGS

The response rate for the quantitative survey was 98%, with a total of 490 adult women participating successfully.

Table 1: Socio demographic characteristics.

Variables	Categories	N=490 n (%)
Age (years)	18 – 24	149 (30.0)
	25 – 31	117 (24.0)
	32 – 38	120 (25.0)
	39 – 45	73 (15.0)
	Above 45	31 (6.0)
Marital status	Single	96 (20.0)
	Married	373 (76)
	Widowed	15 (3.0)
	Divorced/separated	6 (1.0)
Education level	None	2 (0.4)
	Primary	304 (62.1)
	Secondary	176 (35.9)
	Tertiary	8 (1.6)
Religion	Protestant	316 (64.5)
	Catholic	172 (35.1)
	Muslim	2 (0.4)
Occupation	Formally employed	7 (1.3)
	Housewife	196 (40.1)
	Student	68 (13.9)
	Self employed	208 (42.5)
	Unemployed (none)	11(2.2)

The mean age of the respondents was 31 years with a standard deviation of 9.01. Majority were married, Christians and had attained primary level of formal education.

Table 2: Reproductive history

Variables	Categories	n (%)
Number of living children (N=490)	No children	75(15.3)
	Between 1 and 3	151(30.8)
	Over 3	264(53.9)
Gender proportion of children (N=415 who had children)	More of boys	178(42.9)
	More of girls	163 (39.3)
	Equal	74 (17.8)
Last child planned for (N=415 who had children)	Yes	179 (43.1)
	No	236 (56.9)

The average number of children was 5 children per woman.

As shown in Figure 4, over half of the women had three or more children, with almost an equal proportion of boys to girls. Over half of the women in this category had not planned for their last child.

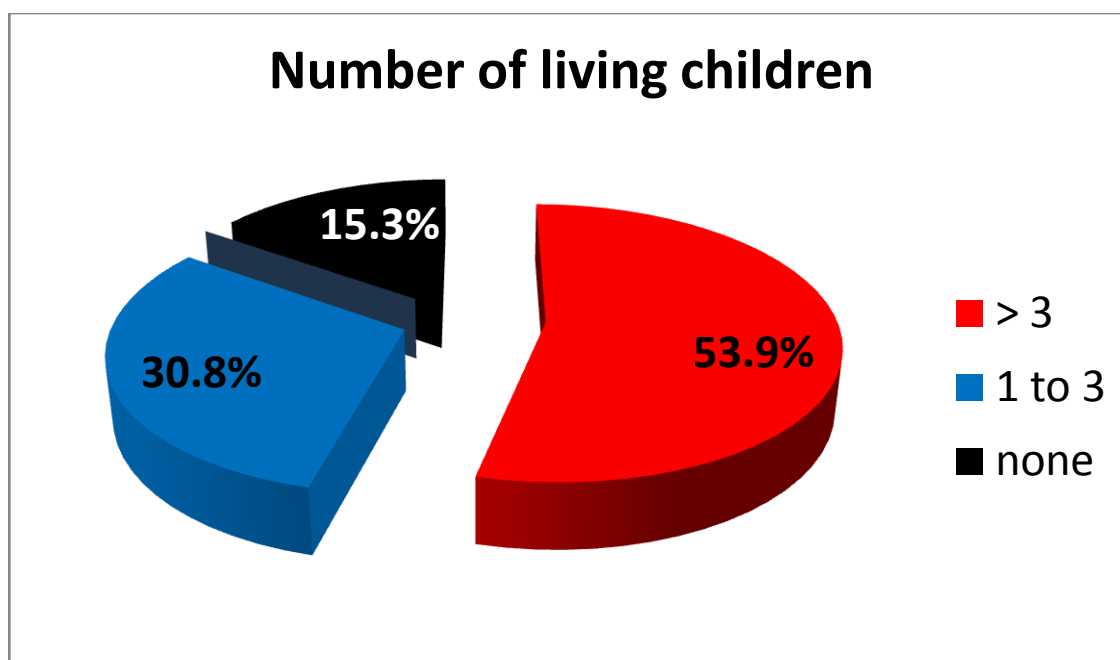


Figure 4: Number of living children.

Table 3: Self-reported awareness of various contraceptive methods.

Variables	Categories	N=490 n (%)
Awareness of contraception	Yes	439 (90)
	No	51 (10)
Awareness of any short acting method	Yes	429 (88)
	No	61 (12)
Awareness of any long acting method	Yes	313 (64)
	No	177 (36)

As shown in Table 3, among all the respondents either currently using contraception or not, there was a 90% level of awareness of contraception. Awareness of long acting methods was lower than that of short acting methods.

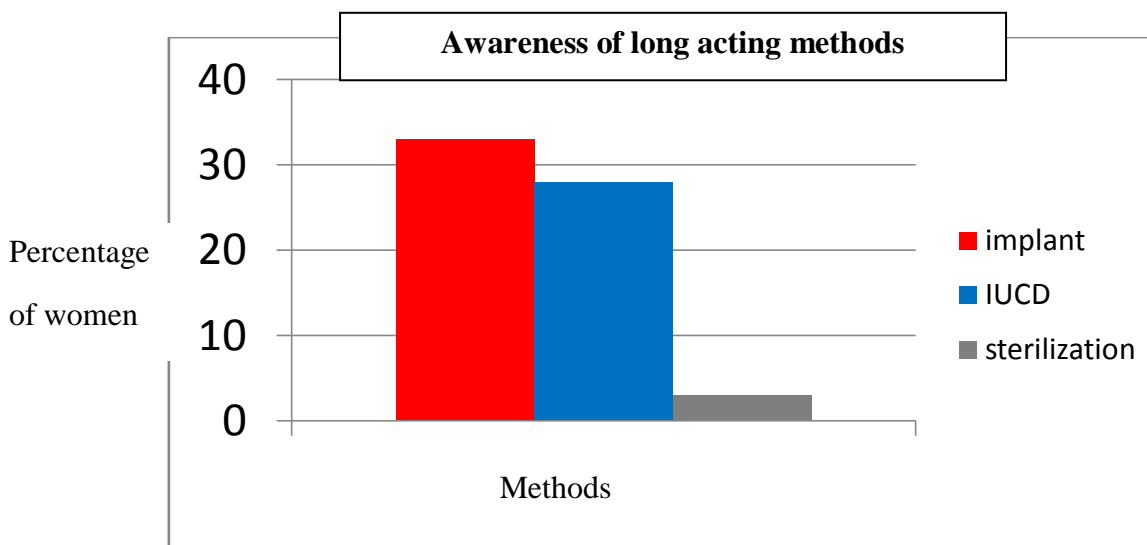


Figure 5: Awareness of various contraceptive methods.

As shown in Figure 5, the leading level of awareness for long acting methods among all women was of the implant (33%).

The relatively lower level of awareness individual long acting methods as well as misconceptions about their use was expressed during the focus group discussions as illustrated by the following responses.

“I have never seen a coil and I do not know how it big or small it is. It must be uncomfortable to carry a foreign object in a sensitive area of one’s body for years.”

(B7, a 32 year old housewife)

“Those sticks they inject and leave in your arm are the ones that cause weakness and paralysis of that hand. They slowly suck your blood and weaken you if you do not eat well. You have to be on a special diet daily like meat and eggs which only the rich people in towns can afford. Before you decide to use those sticks you must make arrangements for special diet and someone to help you with domestic work like fetching water. The few women I have heard using those sticks have really grown thin.”

(C6, 39 year old housewife)

“What I know is that TL (female sterilization) makes the body cold. You even lose appetite for your husband. It causes persistent back pain and the wound never heals.”

(B3, 27 year old housewife)

Table 4: Use of contraception among women in the reproductive age group in WHDSS

Variables	Categories	N=490 n (%)
Ever used contraception	Yes	348 (71)
	No	142 (29)
Ever discontinued	N=348 (Ever used contraception)	
	Yes	136 (39)
	No	212 (61)
Currently using contraception	Yes	230 (47)
	No	260 (53)
Current reproductive goal for using contraception	N=230 (Currently using contraception)	
	Birth spacing	118 (51)
	Permanent limitation	107 (47)
	Not sure	5 (2)
Method currently being used	Short acting method	165 (34)
	Long acting method	65 (13)
	None	260 (53)
Long acting method currently being used	Implant	43(8)
	Sterilization	20 (4)
	IUCD	2 (1)
	None	425(87)
Intentions for future use of long term methods	IUCD	2 (1)
	Implant	144 (29)
	BTL/sterilization	14 (3)
	Not sure	330 (67)
Communicated with spouse on use of contraception	N=373 (Married)	
	Yes	257 (69)
	No	116 (31)

As shown in Table 4, the majority (71%) of the respondents had used contraception during their lifetime, while 47% were currently using contraception. The implant was the leading long acting method currently being used (8%) and intended for use in future (29%). Majority (69%) of married women had communicated with their spouse regarding use of contraception.

From the focus group discussions, the discussants expressed fear of side effects and discomfort of the procedures involved as follows.

“I got irregular periods after insertion of norplant and I knew it was the cause. I demanded for it to be removed.” (C1, 36 yr old, self employed)

“When one has those sticks on their arm, that arm becomes permanently weak and she therefore needs to arrange for someone to assist her with house work for the rest of her life” (D7, 40 yr old, housewife)

“We were queuing waiting for our turns to be done TL. The first lady to be operated walked out bending and grimacing in pain. I and several other colleagues took off in fear”
(C4, 38 yr old female)

The experience of a discussant who had used the coil with no side effects was received with mixed responses. She said, *“I was inserted a coil two months after delivery of my second child by operation (Cesarean Section) by the doctor. He told me it was safe and I will not experience any problems and I have not. He had talked to me about it while I was attending (antenatal) clinic and even showed me how it looked like. I was prepared for it.”(A8, 26 year old, housewife)*

“If I saw and touched it (IUCD) may be I may consider using it(IUCD) knowing what is being put in my body.”(B7, 32 year old, housewife)

“The radio keeps talking about pills and injections. They rarely tell us about the advantages of the coil the way she (A8) has said.”(C3, 34 year old, housewife)

Table 5: Exposure to contraception messages.

Categories	N = 490 n (%)
Radio	150 (30)
Television	3 (1)
Newspaper / Magazine	3 (1)
Billboards	8 (2)
Health worker	267 (54)
Non – health worker	21 (4)
None	38 (8)

As shown in Table 5, health workers were the leading source (54%) of information regarding contraceptives among the respondents.

This was supported by responses from the focus group discussions as illustrated by the following remarks from some of the discussants.

“The only time someone will talk to you about family planning is when you go to the clinic to take your child for immunization or when attending clinic while pregnant where if you arrive early the nurses talk to us about family planning as they prepare to attend to us.”(C4, 30 year old, housewife)

“Those who do not know about family planning are the ones who do not go to the clinic while pregnant or take children for immunization.”(A8, 36 year old housewife)

Table 6: Factors associated with choice of long term methods among those currently using contraception.

Factors	use of long acting method		Chi ² (P value) N
	No	Yes	
Age (N=230)			
18-24	33	7	5.66 (0.224) N=230
25-31	52	19	
32-38	46	17	
39-45	27	18	
> 45	7	4	
Total	165	65	
Religion			
Catholic	58	21	0.104 (0.744) N=230
Protestant	107	44	
Total	165	65	
Level of education			
None	1	0	2.21 (0.526) N=230
Primary	108	42	
Secondary	52	23	
Tertiary	4	0	
Total	165	65	
Number of living children			
3 and below	67	16	4.27 (0.038) N=230
Above 3	98	49	
Total	165	65	
Gender proportion of children			
More of boys	74	29	2.17 (0.335) N=230
More of girls	61	20	
Equal	30	16	
Total	165	65	
Long term methods awareness			
IUD	69	37	6.78 (0.041) N=230
Implant	87	25	
Sterilization	9	3	
Total	165	65	
Current reproductive goal			
Birth spacing	103	22	19.82 (0.001) N=230
Permanent limitation	62	43	
Total	165	65	

As shown in Table 6, among those currently using contraception at the time of the study, a significant association (p value less than 0.05) was demonstrated between use of long acting methods and three factors: the number of living children, awareness of long acting methods and the reproductive goal for contraception.

Table 7: Crude odds ratios for factors associated with choice of long acting methods among current family planning users.

Factors	Crude OR (95% CI)	P value
<i>Number of living children (N=230)</i>		
3 and below	1.00	
Above 3	1.94 (1.03 – 3.66)	0.04
<i>Awareness of long term methods (N=230)</i>		
IUD	1.00	
Implant	0.57 (0.369 – 0.944)	0.022
Sterilization	2.63 (1.27 – 7.42)	0.680
<i>Current reproductive goal (N=230)</i>		
Birth spacing	1.00	
Permanent limitation	3.78 (1.89 – 5.47)	0.031

In the multivariate analysis, the women who had more than three living children were almost twice as likely to choose a long term method as those with three or fewer children as shown in Table 7. Women whose current reproductive goal for contraception was permanent limitation of family size were three times as likely to choose a long term method as those whose goal was birth spacing.

During the focus group discussions, one of the discussants said, “*I agreed to have my tubes tied because I have many children. A total of nine, boys and girls too. If I only had the same number of girls I don’t think I would have agreed.*” **(D5, 44 yr old, housewife)**

Table 8: Adjusted odds ratios for factors associated with choice of long term methods

Factors	Adjusted OR (95% CI)	P value
Number of living children (N=230)		
3 and below	1.00	
Above 3	1.11(0.47 – 2.63)	0.807
Awareness of long term methods (N=230)		
IUD	1.00	
Implant	2. 13 (1.045 – 3.402)	0.016
Sterilization	1. 83 (1.07 – 5.04)	0.24
Current reproductive goal (N=230)		
Birth spacing	1.00	
Permanent limitation	3. 21 (1.48 – 6.29)	0.008

As shown in Table 8, the likelihood of use of a long acting method was three times more among women whose reproductive goal was permanent limitation of family size than among those whose goal was for birth spacing.

The Focus Group discussants, many of whom resided more than 10 km from the nearest facility that could offer the service, cited limited access as a hindrance to their utilization of the service however much they were informed about it.

Although the bivariate analysis did not show significant associations with use of long term contraception, findings from our qualitative arm of the study revealed that women were unwilling to use any form of contraception especially sterilization to limit their family size when they did not have a male child, or if they had more female than male children.

In addition, the focus group discussants who had used IUD reported that their male partners would perceive a foreign body within the vagina during intercourse and it could be a source of marital dispute.

The qualitative arm of the study also revealed myths and misconceptions about long acting methods among the focus group discussants which would discourage them from using those methods. They were as follows:

- Upon insertion of an implant the arm becomes too weak that the woman can no longer perform domestic manual chores as usual and she has to be put on a special diet to prevent deterioration of health from effects of the implant.
- The IUD is a large and sharp object which is not recommended because it may prick her partner and he may also push it out of place into her body causing her to have to undergo an operation to recover it.
- Female sterilization makes a woman to have persistent back pain and have low libido, which may result to her spouse leaving her especially because she is unable to bear children any more.

With regard to male sterilization (vasectomy), the focus group discussants were strongly opposed to their spouses or any man undergoing the procedure, citing that it amounts to castration, he becomes like a woman and can neither speak with authority nor take up any position of leadership in society. A woman would be scorned by her colleagues if they knew her husband has undergone the procedure.

Overall, the themes that emerged from the focus group discussions were lack of awareness, fear of procedures, number and gender of living children, fear of side effects and myths or misconceptions.

CHAPTER FIVE: DISCUSSION

From our quantitative survey, among those currently using contraception, 13 % were using long acting methods, majority of whom were using implants. The rate of use of the various long acting methods was found to be 8%, 4% and 1% for implants, sterilization and IUCD respectively. From the KDHS 2009, the national prevalence for use of long term methods was 3.2%, 1.3% and 1.0% for implants, sterilization, and IUD respectively, while the prevalence for the use of long term methods in Western province, in which our study was conducted, was 7.9%, 1.2% and 0.8% for implants, sterilization, and IUD respectively.

Slightly less than half of married Kenyan women (46 percent) are currently using some form of contraception. Of these, 39% use modern methods of contraception while 7% use traditional methods. Sub-dermal contraceptive implants have low discontinuation rates, but are underused among young women in Africa (Hubacher et al, 2012).

In sub-Saharan Africa, utilization of long acting contraceptive methods is generally much lower than in the western world, as reported from a study South Africa that 6.44% of women were using long acting and permanent methods (Crede et al, 2012). In Ethiopia, the second most populous country in sub Saharan Africa, the overall prevalence rate of long acting method use was reported as 12.3% with no users for female sterilization (Alemayehu et al, 2012).

Among our study population, 64% were aware of long acting contraceptive methods. This rate of awareness is similar to that found by a study in Ethiopia in 2012 that showed an awareness level of 64% for long acting contraceptive methods (Alemayehu et al, 2012). With regard to specific methods, 33%, 28% and 3% of the respondents were aware of implants, IUCD and female sterilization respectively. The proportions were similar to the findings from the KDHS 2009 where the awareness of implants surpassed that of IUCD and female sterilization (KNBS, 2010).

A significant association was demonstrated between awareness of long acting methods and their use with a p-value of less than 0.05. After the multivariate logistic regression analysis, the odds ratio for use of implants among those were aware against those who were not aware was 2.13 (95% CI 1.045 – 3.402) p – value 0.016. This result agrees with findings from a study in South Africa that poor knowledge regarding LAPMs was likely to be contributing to the poor uptake of long term methods (Crede et al, 2012).

Implants were found to be the most popular choice of long term method among those currently using contraception. A study in Kenya showed that many young Kenyan women found implants to be a reasonable alternative to short-acting methods and starting on implants provided substantial and clear protection from unintended pregnancy relative to short-acting methods (Hubacher et al, 2011).

Data from the past three KDHS's (1989, 1999 and 2009) indicate that awareness of implants has been increasing steadily while that of IUD and female sterilization has registered a decreasing trend (KNBS, 2010). Over the same period of time in Kenya, awareness of the short term modern methods has either increased steadily or recorded a plateau of above 85% (KNBS, 2010). Media messages that focus more on short term methods than long term methods could explain the difference in levels awareness and use of the methods.

From a community study in Ethiopia, it was demonstrated that positive knowledge of LAPMs and a desire to limit family size was significantly associated with the use of long acting and permanent contraceptive methods (Alemayehu, 2012). This was a mixed quantitative and qualitative study whose study population was married women of reproductive age group in Ethiopia. Our study yielded similar findings, with a strong association being demonstrated between the use of a long term method by women with a current reproductive goal of limitation of family size with an adjusted OR of 3.01 (95% CI 1.35 – 6.69) and a P – value of 0.007.

A significant association was demonstrated between the use of long term contraception and having more than three living children (P – value 0.04). After the multivariate regression analysis, the crude OR for use of a long term method rather than a short term method for women with more than three children was 1.94 (95% CI 1.03 – 3.66) with a p value of 0.04, while the adjusted OR was 1.11 (95% CI 0.47 – 2.63) with a p value 0.807. Our findings compared with findings from a multinomial logit model in China that demonstrated that an individual's contraceptive choice depends on the number of living children (Wang, 2012).

The finding that the odds of contraceptive use increases with parity may suggest that women tend to wait until they have a specific number of children before considering contraception. This relationship is understandable in a context where beliefs exist that contraceptives may hinder the attainment of future fertility goals. The association is in accordance with the indication of long term methods for limitation of family size upon achievement of the desired number of children. The average number of children from our study was found to be 5 children per woman.

From a review of the literature, the global total fertility rate (TFR) was reported to be 2.6 children per woman in 2010, having declined significantly from 5 children per woman in the early 1950's (Mansour, 2010). From the KDHS 2009, the TFR was found to be 4.6 children per woman, which further decreased in the KDHS 2014 to 3.9, the lowest ever recorded in Kenya (KNBS, 2015; KNBS, 2010).

Previous studies have shown association between use of long term methods and factors such as a woman's age, education level, and religion (Wang, 2012). We studied and analyzed these factors but our findings did not show any significant associations, and neither did the observations from the qualitative study show strong indication that the above mentioned factors are associated with choice of long term methods of contraception.

From a study in Mexico, a statistically significant association between increased utilization of female sterilization and improved access of the service was demonstrated (Rudzik et al, 2010). Access factors were evaluated in the qualitative arm of the study whose observations support this finding.

The Focus Group discussants, many of whom resided more than 10 km from the nearest facility that could offer the service, cited limited access as a hindrance to their utilization of the service however much they were informed about it. This suggests that access factors are key in determining the usage of long term methods among the study population.

Although our study did not show significant associations with use of long term contraception, findings from our qualitative arm of the study revealed that women were unwilling to use any form of contraception especially sterilization to limit their family size when they did not have a male child, or if they had more female than male children. This finding indicated that cultural factors also play a role in determining the choice of sterilization as a long term contraceptive method.

Moreover, the focus group discussants who had used IUD reported that their male partners would perceive a foreign body within the vagina during intercourse and it could be a source of marital dispute. This indicates a gap in awareness of IUD as found from the quantitative data.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

Use of long term methods of contraception was low compared to short term methods but was slightly higher than the national rate with the most commonly used long term contraceptive method being the implant.

Factors associated with choice of long term contraception among women of reproductive age in Webuye HDSS's population:

1. Awareness of long acting methods.
2. Intention to limit family size.

Observed barriers to choice of long acting contraceptive methods were:

1. Myths and misconceptions about long acting contraceptive methods.
2. Fear of side effects of long acting contraceptive methods.
3. Fear of procedures of administration of long acting contraceptive methods.

6.2 RECOMMENDATIONS

1. Strategies to increase awareness of long acting contraceptive methods at the community level to promote their informed uptake and dispel associated myths and misconceptions with regard to their use.
 - Empower community health workers to give regular health education talks to the community.

- Media health talks: the principal investigator successfully conducted health education talks on long acting contraceptive methods in two separate local radio stations with the support of APHIA Plus - Western region as an interventional feedback to the community after the study. We recommend continuation of such talks to meet the awareness needs of the community with regard to long acting contraceptive methods.

2. Further studies.

- To evaluate the impact of health education on community perceptions and misconceptions regarding long acting contraceptive methods.

APPENDICES

Appendix 1: INFORMED CONSENT

My name is JONATHAN NTHULA NTHUSI, a doctor in Webuye district hospital. I am carrying out research on methods commonly used in family planning within in your community.

Purpose of the study: This is a cross sectional study whose purpose is to understand and describe the factors that are related to the choice of various long acting contraceptive methods including implants, intrauterine devices and tubal ligation among women within the reproductive age group in a Health and Demographic Surveillance System.

Procedures: There shall be no procedures undertaken on a participant, only face to face interviews shall be conducted.

Benefit of participation in the study: As a participant, you will have an opportunity to access health education on a one-on one basis with the primary investigator and/or the research assistants with regard to family planning and about any other reproductive health issues that shall be addressed during the interviews.

You will only lose a little of your time during the interview, which shall be kept to a reasonably bare minimum.

I request you to participate in this research. Your participation is voluntary and you have the option to decline without any consequences.

The findings of this research will be used to improve service delivery in future.

PARTICIPANT'S CONSENT

I am fully informed about the ongoing research on methods of family planning in Webuye district hospital.

All my questions and concerns have been responded to and I understand that my participation is voluntary.

I consent to participate

Signed: _____

Date: _____

In case of any comments, questions or complaints, kindly contact the principal investigator

(Dr. Jonathan Nthusi) on 0720 754471.

Appendix 2: QUESTIONNAIRE

A questionnaire designed to examine the factors associated with the choice of long term contraception among adult women of reproductive age group at Webuye Health and Demographic Surveillance System's population.

Questionnaire number _____

Date _____

WHDSS ID # _____

A: DEMOGRAPHIC DATA *(please tick where necessary)*

1. Age (years) _____
2. Age of spouse(years) _____
3. Residence _____
4. Marital status

Single

Married

Widowed

Divorced/separated

5. Religion

- a. Christian
- b. Muslim
- c. Other (specify) _____

6. Occupation

- a. Housewife
- b. Student
- c. Self employed
- d. Other employment (specify)

7. Education level

- a. None
- b. Primary
- c. Secondary
- d. Tertiary

8. Number of living children

- a. Boys
- b. Girls

9. Was your last child **planned for**?

- a. Yes
- b. No

B: KNOWLEDGE OF FAMILY PLANNING METHODS

Do you know of any family planning method?

Yes

No

If yes, which ones do you know?

1. Long term methods
 - a. IUD
 - b. Implants
 - c. Sterilization
 - d. Other (specify)
2. Short term methods
 - a. Pills
 - b. Injectables
 - c. Condoms
 - d. Lactational amenorrhea
 - e. Emergency contraception
 - f. Other (specify)
3. Traditional methods
 - a. Rhythm
 - b. Withdrawal
 - c. Herbal
 - d. Other (specify)

C: EVER USE OF CONTRACEPTION

1. Have you ever used contraception
 - a. Yes
 - b. No

2. If Yes, which method (s)?

Long term methods used

- a. IUD
- b. Implants
- c. Sterilization
- d. Other (specify)

Short term methods used

- e. Pills
- f. Injectables
- g. Condoms
- h. Lactational amenorrhea
- i. Emergency contraception
- j. Other (specify)

Traditional methods used

- k. Rhythm
- l. Withdrawal
- m. Herbal
- n. Other (specify)

D: NUMBER OF CHILDREN AT FIRST USE OF CONTRACEPTION_____

E: CURRENT USE OF CONTRACEPTION

Are you currently using any contraception?

1. Yes
2. No

If Yes, which method(s)?

Long term methods

- a. IUD
- b. Implants
- c. Sterilization
- d. Other (specify)

Short term methods

- e. Pills
- f. Injectables
- g. Condoms
- h. Lactational amenorrhea
- i. Emergency contraception
- j. Other (specify)

Traditional methods

- k. Rhythm
- l. Withdrawal

- m. Herbal
- n. Other (specify)

Current reproductive goal for seeking contraception

- a. Child spacing
- b. Permanent limitation of family size
- c. Other (specify)

F: TIMING OF PERMANENT CONTRACEPTION (where applicable) (AGE) _____

G: CONTRACEPTIVE DISCONTINUATION

- 1. Have you ever discontinued any method of contraception within 12 months of use?
 - a. No
 - b. Yes (Reason(s))_____

H: INTENTIONS FOR USE OF LONG TERM CONTRACEPTIVE METHOD IN THE FUTURE (THOSE CURRENTLY USING SHORT TERM METHOD)

- 1. NONE
- 2. IUD
- 3. IMPLANT
- 4. STERILIZATION
- 5. OTHER (SPECIFY)

I: REASONS FOR UNINTENDED USE(FGD)

J: EXPOSURE TO FAMILY PLANNING MESSAGES

1. None
2. Radio
3. Television
4. Newspaper/magazine
5. Billboards
6. Health worker
7. Non-health worker
8. Other (specify)

K: HUSBAND/PARTNER'S KNOWLEDGE OF USE OF CONTRACEPTION

1. Knows
2. Does not know
3. Unsure
4. Other (specify)

Appendix 3: FOCUS GROUP DISCUSSION GUIDE

Discussion topics

1. How is your understanding concerning modern contraceptives? What else?
2. What do you know about long acting (Intra uterine contraceptive device, Implant) and Permanent (voluntary sterilization) contraception? What else?
3. What are the advantages/disadvantages of long acting (Intra uterine contraceptive device, Implant) and Permanent (voluntary sterilization) contraception over others? What else?
4. Would you like to know more about long acting (Intra uterine contraceptive device, Implant) and Permanent (voluntary sterilization) contraception? Why?
5. When should people start to use long acting (Intra uterine contraceptive device, Implant) and permanent (voluntary sterilization) contraception? Why?
6. What is the optimum family size you think is enough? Is having large family size useful or harmful? Why?
7. Who should decide about family size? Why do you think so?
8. Who should use long acting and permanent contraception? Why?

Is there any additional idea that you want to add on our discussion on long acting and permanent contraceptive methods and related issues?

Thank you for participating in the discussion.

Appendix 4: QUESTIONNAIRE IN BUKUSU

**Kamarevo khe khuchungusasikila vandu navarovora chingila chindei che
khukhingilila khuesia mu vakhasi vali nende kimiaka kye khwivula mu Webuye
Health and Demographic Surveillance System.**

Questionnaire number _____

Date _____

WHDSS ID # _____

A: DEMOGRAPHIC DATA *(please tick where necessary)*

1. Kimiaka _____

2. Kimiaka kyo msecha/mkhasi(years) _____

3. Engo _____

4. Enju

senacha munju ta

Nacha munju

Namulekhwa

Khwalekhana

5. Ekanisa

a. Omukristo

b. Omusilamu

c. Ekindi (andika ndala si) _____

6. Ekasi
- Omukhaye we munju
 - Omusomi
 - Weyandika
 - Ekasi ekindi (andika ndala si)

7. Vusomi
- Senacha esikuli ta
 - Nola primary
 - Nola musekendri
 - Nacha mkolechi

8. Vavana valio
- Vasoreri
 - Vakhana

9. Weikina khunyola omwana woo omumalilisi?
- Yee
 - Tawe

B: LIMANYA LYE CHINGILA CHE KHUKHINGILILA KHUESIA

Omanyile engila yosiyosi ye khukhingilila khuesia? Yee

Tawe

Kava yee omanyile ndala si?

4. Chingila chichikhala lukali
- Viekhura mulusaya

- b. Viekhura musikhova
- c. Khukhala chisia
- d. Ekindi (loma ndala sina)

5. Short term methods

- a. Kamalesi ke khumila
- b. Esindani
- c. Chikodomu
- d. Khununia
- e. Chingila che vwangu vwangu
- f. Ekindi (loma ndala si)

6. Chingila che khale

- a. Khupima chinyanga
- b. Khurusia
- c. Kimisala
- d. Ekindi (loma ndala sina)

C: KHURUMIKHILA CHINGILA CHE KHUKHINGILILA KHUESIA

3. Wairumikhilakho engila ye khukhingilila khuesia

- a. Yee
- b. Tawe

4. Kava yee, warumikhila ngila si?

Chingila chichikhala lukali

- a. Viekhura mulusaya

- b. Viekhura musikhoba
- c. Khukhala chisia
- d. Ekindi(loma ndala sina)

Chingila chinyimbi

- e. Kamalesi ke khumila
- f. esindani
- g. chikondomu
- h. khununia
- i. engila ye vwangu vwangu
- j. Ekindi (Loma ndala sina)

Chingila che khale

- k. Khupima chinyinga
- l. Khurusia
- m. Kimisala
- n. Ekindi (Loma ndala sina)

D: Wava ne vavana venga ngawanja khurumikhira chingila che khukhingila khesia_____

E: VURUMIKHI VWE CHINGILA CHE KHUKHINGILILA KHUESIA (LUNO)

Luno khorumikhila engila ye khukhingilila khuesia?

- 1. Yee
- 2. Tawe

Kava yee, khorumikhila ngila si?

Chingila chichikhala lukali

- a. Viehura mulusaya
- b. Viekhura musikhova
- c. Khukhala chisia
- d. Ekindi (loma ndala sina)

Chingila chinyimbi

- e. Kamalesi ke khumila
- f. esindani
- g. Chikondomu
- h. Khununia
- i. Engila ye vwangu vwangu
- j. Ekindi (loma ndala sina)

Chingila che khale

- k. Khupima chinyanga
- l. Khurusia
- m. kimisala
- n. Ekindi (loma ndala sina)

Sina sikila wenya khukhingilila khuesia

- a. Khutumia vavana

- b. Khuakama khwivula lundi
- c. ekindi (loma ndala si)

F: CHISAA CHE KHURUMUKHIRA CHINGILA CHICHIKHALA LUKALI (where applicable) (KIMIAKA) _____

G: Khulekha khurumikhira chingila che khukhingilila khuesia

- 2. Wailekhakho khurumikhila engila yosiyosi ye khukhingilila khuesia nokhamala kimiesi 12?
 - a. Tawe
 - b. Yee (Sisiakila))_____

H: KHURUMIKHIRA CHINGILA CHICHIKHALA LUKALI CHINYANGA CHE EBWENI (VALI KHAVARUMIKHIRA CHINGILA CHINYIMBI)

- 1. MBAO
- 2. VIEKHURA MULUSAYA
- 3. VIEKHURA KHUSIKHOVA
- 4. KHUKHALA CHISIA
- 5. EKINDI (LOMA NDALA SI)

I: SIKILA KHURUMIKHILA NOKHENYILE TA (In depth interview, FGD)

J: KHUULILA KAMAKHUWA KHU CHINGILA CHE KHUKHINGILILA KHUESIA

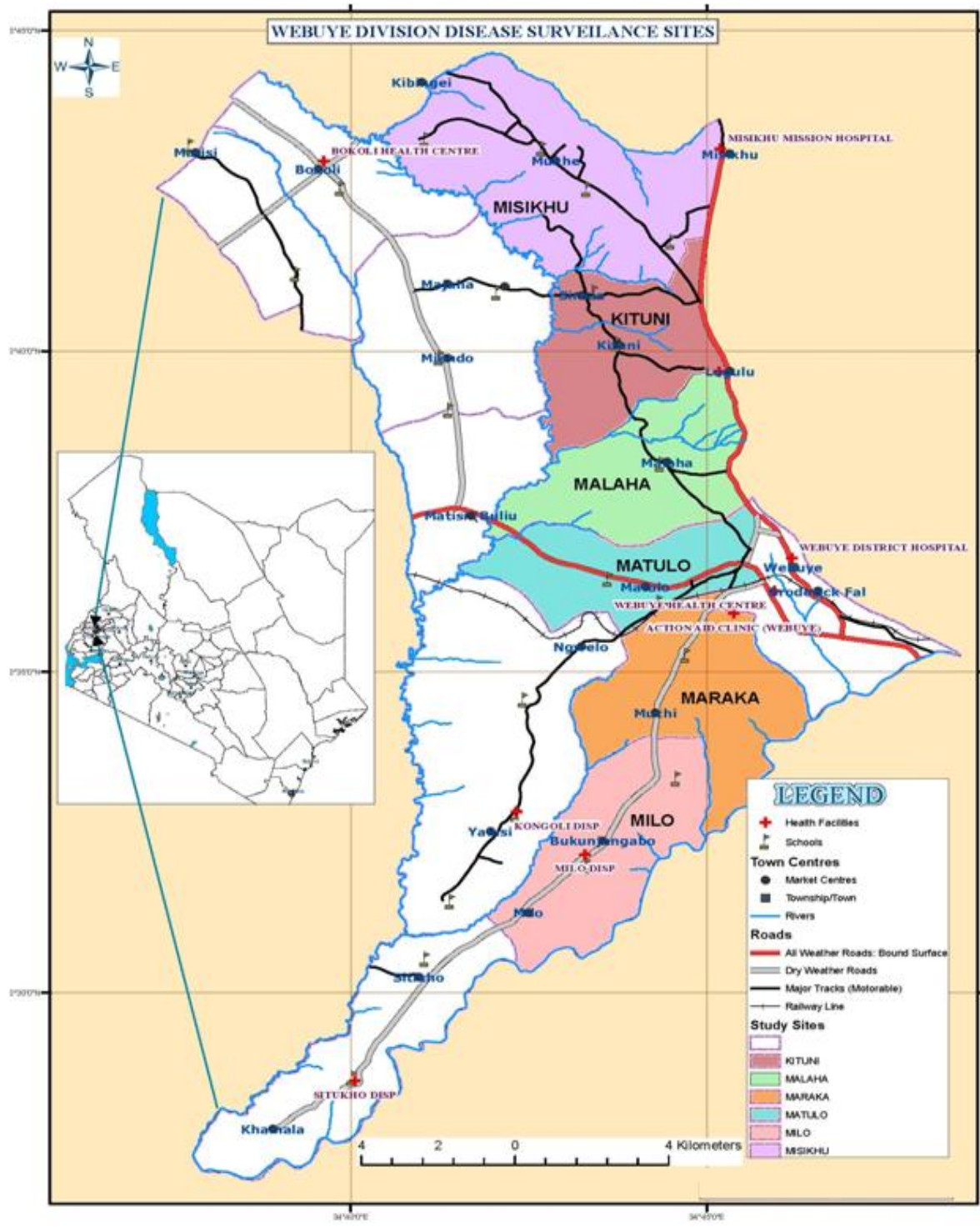
- 1. Mbao
- 2. Khuretio
- 3. Khutivi

4. Khwikazeti
5. Kamapango
6. Khumkholi we muosivito
7. Okhali omkholi we muosivito
8. Ekindi (loma ndala sina)

K: Limanya lyo msecha/omkhasi khu chingila che khukhingilila khuesia

1. Amanyile
2. Samanyile ta
3. Somanya ta
4. Ekindi (loma ndala sina)

Appendix 5: THE WDHSS MAP



Appendix 6: IREC APPROVAL LETTER



MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

Reference: IREC/2013/12
Approval Number: 000960

Dr. Jonathan N. M. Nthusi,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

Dear Dr. Nthusi,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee have reviewed your research proposal titled:-

"Factors Associated with the Choice of Long Acting Contraception among Women of Reproductive age at Webuye Health and Demographic Surveillance System's Population."

Your proposal has been granted a Formal Approval Number: **FAN: IREC 000960** on 14th March, 2013. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 13th March, 2014. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

W. W. Aruasa
DR. W. ARUASA
VICE-CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc: Director - MTRH
Principal - CHS
Dean - SOM
Dean - SPH
Dean - SOD
Dean - SON



MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET
Tel: 33471/2/3
14th March, 2013



REFERENCES

- Alemayehu M., Belachew T., & Tilahun T. (2012). Factors associated with utilization of long acting and permanent contraceptive methods among married women of reproductive age in Mekelle town, Tigray region, north Ethiopia, *BMC Pregnancy Childbirth*,12: 6.
- Ali M., Cleland J. (1999). Determinants of contraceptive discontinuation in six developing countries, *Journal of Biosocial Science*, 31:343–60.
- Ali M., Seuc A., Rahimi A., Festin M. & Temmerman M. (2013). A global research agenda for family planning: results of an exercise for the setting of research priorities, *Bulletin of the World Health Organization*; Type: Research Article ID: BLT.13.122242.
- Alkema L., Kantorova V., Menozzi C. & Biddlecom A. (2013). National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: A systematic and comprehensive analysis, *The Lancet*, 381 (9878):1642-1652.
- Andreea A., Duff G., Sabrina K. & Amy T. (2011). Low use of contraception among poor women in Africa: an equity issue, *Bulletin of the World Health Organization*, (89): 258-266.
- Babalola S., John N., Ajao B. & Speizer I. (2015). Ideation and intention to use contraceptives in Kenya and Nigeria, *Demographic Research*, 33, (8): 211–238.
- Babalola S.&John N. (2012). Factors underlying the use of long-acting and permanent family planning methods in Nigeria: A qualitative study. *The RESPOND Project Study Series: Contributions to Global Knowledge—Report No. 5*. New York: Engender Health/The RESPOND Project.
- Buhling K., Zite N., Lotke P. & Black K. (2014). for the INTRA Writing Group, Worldwide use of intrauterine contraception: a review, *Contraception*, 89(3):162.
- Catherine N. & Everd M. (2009). Factors related to the uptake of natural family planning by clients of catholic health units in Masaka Diocese, Uganda, *Health policy and development* 6 (3), 126-141.
- Central Statistical Agency (CSA) (Ethiopia) & ICF International, (2012). *Ethiopia Demographic and Health Survey 2011*. Addis Ababa, Ethiopia and Calverton, Maryland, USA.
- Central Statistical Agency (CSA) Nigeria, (2014). *Nigeria Demographic and Health Survey 2013*, Abuja, Nigeria, and Rockville, Maryland, USA, National Population Commission (NPC) [Nigeria] and ICF International.

- Chigbu B., Onwere S., Aluka C., Kamanu C., Okoro O. & Feyi-Waboso P. (2010). Contraceptive choices of women in rural Southeastern Nigeria, *Nigerian Journal of Clinical Practice*, Jun; 13(2):195-9.
- Crede S., Hoke T., Constant D., Green M., Moodley J. & Harries J. (2012). Factors impacting knowledge and use of long acting and permanent contraceptive methods by postpartum HIV positive and negative women in Cape Town, South Africa: a cross-sectional study, *BMC Public Health*, (12), 197.
- Gayen K. & Raeside R. (2010). Social networks and contraception practice of women in rural Bangladesh, *Social Science & Medicine*, 71(9):1584-92. doi:10.1016/.2010.08.002.
- Gebremariam A. & Addissie A. (2014). Intention to use long acting and permanent contraceptive methods and factors affecting it among married women in Adigrat town, Tigray, Northern Ethiopia, *Reproductive Health 2014*, 11:24, Retrieved from <http://www.reproductive-health-journal.com/content/11/1/24>, doi:10.1186/1742-4755-11-24.
- Government of Kenya (GOK), (2010). *Review of the 2004–2008 Reproductive Health Research Agenda and the proposed 2010–2014 Research Agenda*, Nairobi, Kenya, Ministry of Health (MOH)/Division of Reproductive Health (DRH).
- Hubacher D., Olawo A., Manduku C. & Kiarie J. (2011). Factors associated with uptake of subdermal contraceptive implants in a young Kenyan population, *Contraception 84* (4): 413-7.
- Hubacher D., Olawo A., Manduku C., Kiarie J. & Chen P. (2012). Preventing unintended pregnancy among young women in Kenya: prospective cohort study to offer contraceptive implants, *Contraception 86*(5); 511-7.
- Jacobstein R. (2008). Programming for IUD services; *The ACQUIRE Project/Engender Health; Acquiring Knowledge*; New York.
- Kenya National Bureau of Statistics (KNBS) (2015). *Kenya Demographic and Health Survey 2014-Key Indicators*, Calverton, Maryland.
- Kenya National Bureau of Statistics (KNBS) and ICF Macro. (2010). *Kenya Demographic and Health Survey 2008-09*. Calverton, Maryland.
- Link C. (2011). Spousal Communication and Contraceptive Use in Rural Nepal: An Event History Analysis, *Studies in Family Planning* 42: 83–92. doi:10.1111/j.17 28-4465.2011.00268.x.
- Mansour D., Inki P. & Gemzell-Danielsson K. (2010). Efficacy of contraceptive methods: a review of the literature, *European Journal of Contraception and Reproductive Health Care*, (1):4-16.

- Michellea D., Robb S., Marcie R. & Doris B. (2012). The influence of perceptions of community norms on current contraceptive use among men and women in Ethiopia and Kenya, *Health Place* 18:766–73.
- Ochako R., Mbondo M., Aloo S., Kaimenyi S., Thompson R., Temmerman M. & Kays M. (2015). Barriers to modern contraceptive methods uptake among young women in Kenya: a qualitative study; *BMC Public Health* 15:118, doi:10.1186/s12889-015-1483-1.
- Olugbenga-Bello A., Abodunrin O. & Adeomi A. (2011). Contraceptive Practices Among Women In Rural Communities In South-Western Nigeria, *Global Journal of Medical research* 11 (2) 1 – 7.
- Pope C. & Mays, N. (Eds), (2006). *Qualitative Research in Health Care*, (3rd ed), Massachusetts, USA, Blackwell Publishing.
- Ross J. & Winfrey W. (2001). Contraceptive use, intention to use and unmet need during the extended postpartum period, *International Family Planning Perspective*, 27:20–27.
- Rudzik A., Leonard S. & Sievert L. (2010). Determinants of Tubal Ligation in Puebla, Mexico, *European Journal of Contraception* 15 (2), 365-382.
- Sonfield A. (2006). Working to eliminate the world's unmet need for contraception, *Guttmacher Policy Review*, 9:10–13.
- Thoai D., Nuccio O., Reiss K. & Pereira S. (2013). Expanding long-acting and permanent contraceptive use in sub-Saharan Africa to meet FP2020 goals, *Marie Stopes International - Research Brief Series 006*.
- Tumlinson K., Speizer I., Davis J., Fotso J. Kuria P & Archer L. (2013). Partner Communication, Discordant Fertility Goals, and Contraceptive Use in Urban Kenya; *African Journal of Reproductive Health*, 17 (3): 79 – 90.
- Uganda Bureau of Statistics (UBOS) (2012). *Uganda Demographic and Health Survey 2011*, Kampala, Uganda, UBOS and Calverton, Maryland: ICF International Inc.
- UNFPA State of World Population (2004). *Reproductive Health and Family Planning*, Retrieved from www.unfpa.org/swp/2004/english/ch6/index.htm, (accessed on 18th October 2010).
- United Nations (UN) (2015). *World Contraceptive Use 2015*, Geneva, Switzerland, Department of Economic and Social Affairs, Population Division, Accessed from <http://www.un.org/en/development/desa/population/theme/family-planning/index.shtml>, (accessed on 30th July 2015)

- United Nations (UN), (2011). *World Contraceptive Use 2011*, Retrieved from <http://www.un.org/esa/population/publications/contraceptive2011/contraceptive2011.htm> (accessed on March 20, 2014).
- United Nations (UN), (2014). The correspondence between projected total fertility and contraceptive prevalence using the proximate determinants framework, *Technical Paper No. 2014/1*, New York, USA, Population Division, United Nations Department of Economic and Social Affairs.
- United States Agency for International Development (USAID) (2008). Long-Acting and Permanent Methods of Contraception: Without them, a Country's Development Will Be Low and Slow, *The ACQUIRE Project/Engender Health; Acquiring Knowledge*, 14:1-12.
- United States Agency for International Development (USAID), (2006). Long-Acting and Permanent Methods of contraception: Meeting Clients' Needs. *USAID Issue Brief*, Washington, DC.
- United States Agency for International Development (USAID), (2008). Save Lives, Alleviate Poverty, Spur Development: Invest in Long Term and Permanent Methods of Contraception, *Advocacy Brief No.1*.
- Wang C. (2012). Trends in contraceptive use and determinants of choice in China: 1980-2010, *Journal of Contraception*, 85(6):570-9. doi:10.1016.
- World Health Organization (WHO), (2010). *Medical Eligibility Criteria for Contraceptive Use*; Geneva, Switzerland, WHO Department of Reproductive Health.
- Zhang X., Wang G., Shen Q., Yu Y., Sun Y., Yu G..Ye D. (2009). Current status of contraceptive use among rural married women in Anhui Province of China, *BJOG*, 116 (12):1640-5.